9816-1

Operation, Installation, and Service Manual

TRUCK MOUNTED HOOK HOISTS

MODEL KP816

Congratulations

You have just purchased a quality designed and manufactured K-PAC Product. Advanced features have been designed into all K-PAC equipment for modern waste disposal operations. As with any investment, a return is expected, and the return received from this investment will be in the form of maximum performance during many years of dependable service.

In order to maintain quality performance of the new K-PAC investment, it is important that all of the information in the manual be reviewed and studied carefully before operation. The contents provide operating instructions, installation instructions, maintenance instructions, parts information, and information on how to make adjustments.

It is suggested that owner / operators read American National Standard Safety Requirements for refuse, handling and hauling of collection and compaction equipment. Copies may be purchased from the AMERICAN NATIONAL STANDARDS INSTITUTE, 1430 BROADWAY, NEW YORK, NEW YORK, 10018.

Elimination of the hazards listed in this manual should not be construed as providing guarantees that the equipment will meet or exceed all standards or regulations, or will be completely safe to all personnel. The operator should inspect and review the equipment after it is in his possession for adequacy in safety for the function for which it will be used.

READ ALL THE SAFETY DECALS ON THE EQUIPMENT. WATCH FOR THE SAFETY SYMBOL AND READ THE INFORMATION. THIS IS FOR YOUR OWN PROTECTION.

Member of

KP816 HOOK HOIST

DEALER PREDELIVERY CHECK SHEET

TO BE CHECKED BY DEALER

CUSTOMER _____ DATE _____

ADDRESS _____ COUNTY _____

DEALER _____

ADDRESS _____ COUNTY _____

MODEL _____ SERIAL NUMBER _____

DEALER CHECK:

1. ____ Check that all cylinders are full of hydraulic oil and free of air. Use Mobil DTE25 or equivalent.
2. ____ Examine all hydraulic hoses to see that they are protected from damage.
3. ____ Check that all decals are in place and legible.
4. ____ Test the back-up and hoist-up alarms.
5. ____ Check that all tail lights are functioning properly.
6. ____ Engage the P.T.O. Check the dash light. Check for any unusual noises.
7. ____ Check that the control handles correspond with directional decals.
8. ____ Make sure all lubrication points have been lubed.

DELIVERED BY: _____

DATE _____

CUSTOMER REVIEW SHEET

1. ____ Owner's manual provided.
2. ____ Warranty card is filled out and mailed.
3. ____ Review the safety warnings and cautions as listed in this manual.
4. ____ Review the container loading, and unloading procedures.
5. ____ Explain the importance of proper maintenance of the boom pivot, boom slide and hydraulic components.
6. ____ Review all of the lubrication points.

DELIVERED BY: _____

DATE _____

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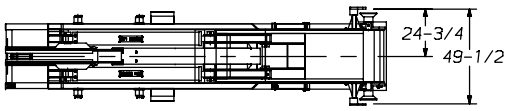


Chassis C.A.:
138"/156" (See pages A1, A2)★

Frame Width:
34" (Outside) + reinforcement thickness

G.V.W.:
33,000lbs. - 52,000 lbs.

Frame Height:
41" top of chassis unladen
(varies with chassis)

Sub Frame:
Full length 5" x 3" tube

Load Rating:
32,000 lbs. with suitable G.V.W. including body weight

Dump Angle:
47° with suitable body length

Operating Pressure:
3000 PSI

Gear Pump:
28 gpm @ 1500 rpm direct mount STD.

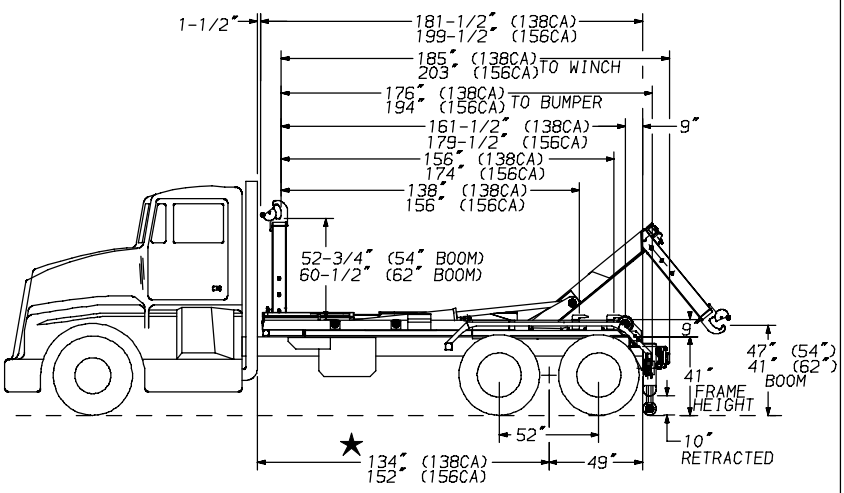
Operation:
In-cab controls standard

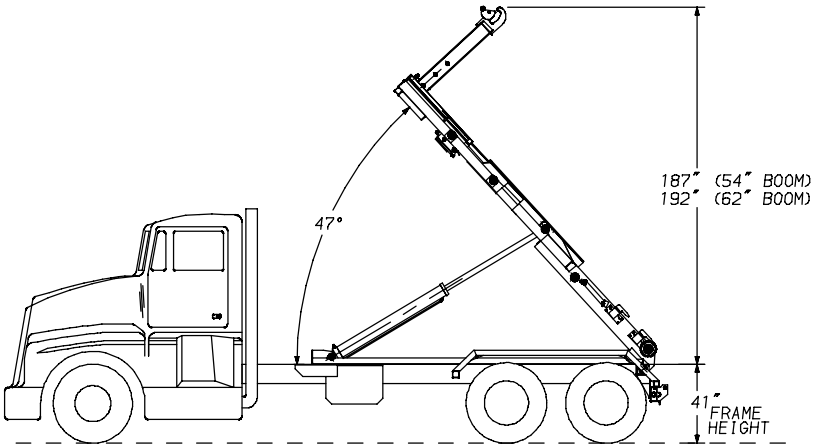
Hook Height:
54", 62"

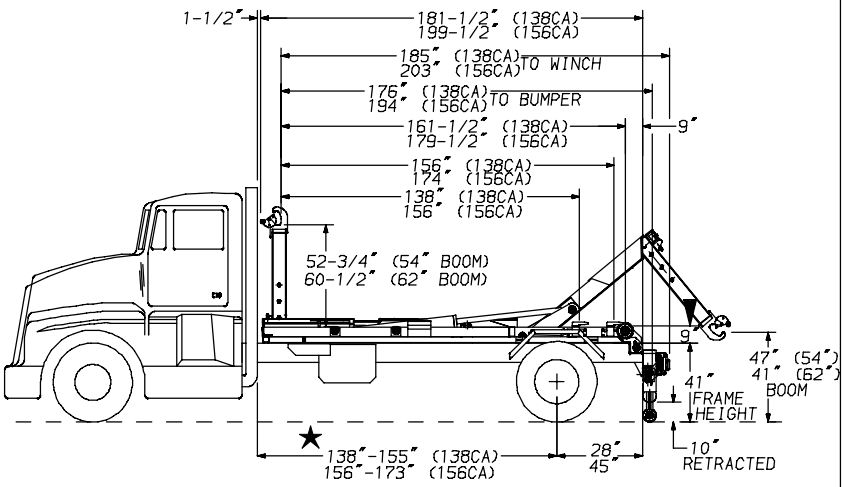
Weight:
3,600 lbs.

Hydraulic Planetary:
4 ton or 6 ton 50' of 7/16" cable w/hook, level wind feature

Cylinders:
Twin double acting 6 x 55-1/2 Cylinder
Boom Cylinder 3 x 35 138CA
3 x 48 156 CA
Stabilizer Cylinder (1) 3-1/2 x 10 Slave
(1) 3-3/4 x 10 Slave







Low Pressure American S.A.E Hydraulic System

Gear driven hydraulic pump

Braided and socked hose

Phenolic pads in boom

Sliding "L" arm

2-full sub-frame locks

Cantilevered lock on hook

★ NOTE: DO NOT SPEC TRUCK BEFORE READING MOUNTING INSTRUCTIONS! 10/01
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SAFETY DECALS

See Parts Listing page for part number and proper location.

⚠ WARNING

Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

INSPECT the hose assembly before each use.

REPLACE the hose assembly immediately if:

A. The jacket of the hose appears abnormal.
B. You have reason to believe it may be abnormal.
C. There is any fluid leakage.
D. The couplings are damaged.
E. The hose is damaged or kinked.
F. The reinforcement is visible through the jacket.

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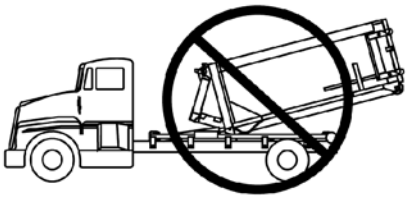
⚠ DANGER



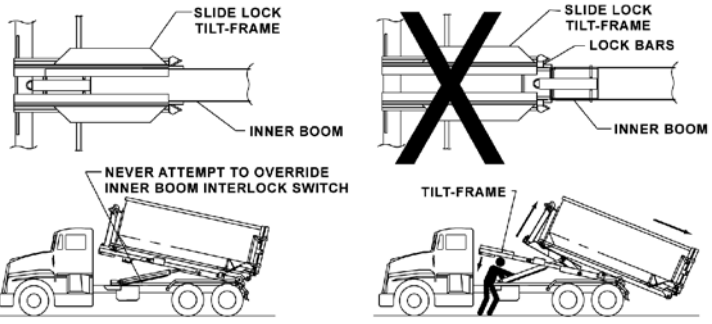
HOOK AND BAIL HEIGHTS *MUST* MATCH

OR LOAD WILL BE UNSTABLE AND MAY FALL CAUSING SERIOUS INJURY OR DEATH TO OPERATOR AND/OR BYSTANDERS.

74-490

⚠ DANGER

TO DUMP LOAD INNER BOOM MUST BE FULLY EXTENDED AND SECURELY LATCHED TO TILT FRAME.



Failure to comply with warnings could allow inner boom and tilt-frame to separate resulting in serious injury or death.

74-593

⚠ CAUTION

DO NOT DRIVE WITH P.T.O. ENGAGED

74-481

⚠ DANGER

STAND CLEAR

WHEN THIS UNIT IS IN OPERATION!

FAILURE TO DO SO COULD RESULT IN SERIOUS PERSONAL INJURY.

74-302

⚠ CAUTION

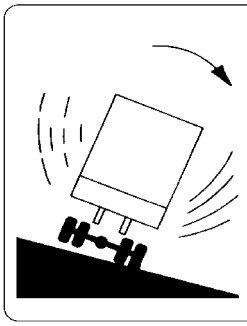
DO NOT EXCEED 1600 ENGINE RPM WHEN OPERATING POWER TAKE OFF!

74-299

⚠ CAUTION

SET BRAKE BEFORE OPERATING WINCH.

74-476



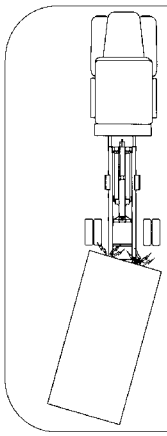
⚠ WARNING

DO NOT LOAD, UNLOAD OR DUMP A CONTAINER ON UNEVEN GROUND.

A LOADED CONTAINER CREATES A TOP-HEAVY LOAD. USE CAUTION WHEN DRIVING ON UNEVEN GROUND AND TURNING CORNERS.

SERIOUS PERSONAL INJURY AND EQUIPMENT DAMAGE COULD RESULT.

74-297



⚠ WARNING

DO NOT ATTEMPT TO LOAD A CONTAINER UNLESS THE HOIST AND CONTAINER ARE CORRECTLY ALIGNED.

KEEP THE CONTAINER RAILS SQUARELY ENGAGED WITH THE HOIST ROLLERS.

FAILURE TO DO SO COULD CAUSE THE CONTAINER TO MISS THE HOIST ROLLERS CREATING AN UNSTABLE LOAD.

74-486

SAFETY DECALS

See Parts Listing page for part number and proper location.

⚠ CAUTION

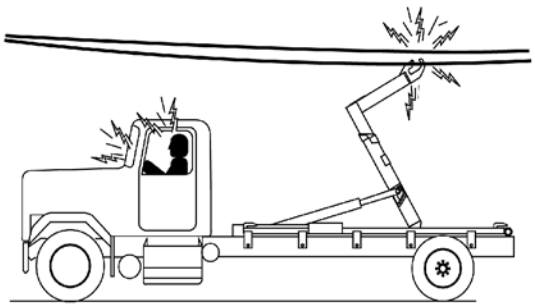
DO NOT ATTEMPT TO OPERATE EQUIPMENT WITHOUT PROPER TRAINING.

1. OBSERVE AND PRACTICE ALL SAFETY AND OPERATING RULES AS ESTABLISHED BY YOUR COMPANY AND THOSE INCLUDED IN MANUAL.
2. KEEP CLEAR OF HOIST FRAME WHEN RAISING OR LOWERING.
3. DO NOT WORK ON OR UNDER THE HOIST UNLESS PROPERLY BLOCKED AND SECURED.
4. DO NOT EXCEED THE MAXIMUM RATING FOR HOOK OPERATING LIMITS STATED BY THE MANUFACTURER.
5. OPERATE ON LEVEL GROUND.
6. DISTRIBUTE LOAD EVENLY.
7. DO NOT DRIVE TRUCK WITH P.T.O. ENGAGED.
8. BE SURE TRUCK IS CLEAR OF ANY OVERHEAD ELECTRICAL WIRES OR OBSTRUCTIONS BEFORE RAISING HOIST.

BE CAREFUL - - BE ALERT
USE GOOD JUDGEMENT

74-477

⚠ DANGER



BE AWARE OF POWERLINES AND OVERHEAD OBSTRUCTIONS.

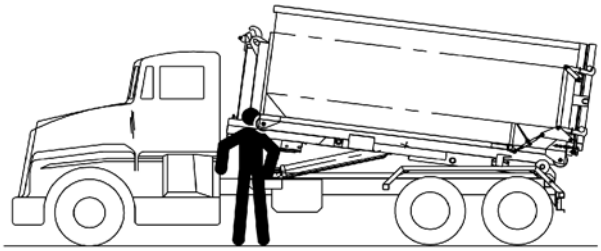
CONTACT BY THE HOIST OR CONTAINER COULD CAUSE SERIOUS INJURY OR DEATH TO THE OPERATOR AND BYSTANDERS.

74-485

⚠ WARNING

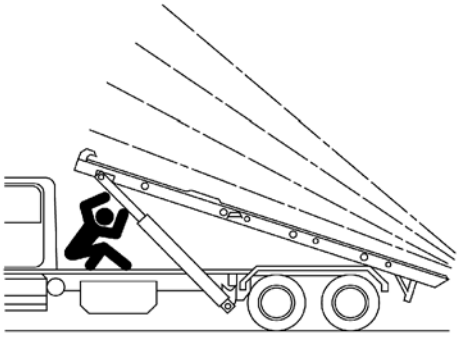
OPERATOR USING OUTSIDE CONTROLS

STAND CLEAR OF CONTAINER WHEN LOADING AND UNLOADING. CONTACT COULD CAUSE SERIOUS BODILY INJURY.



74-596

⚠ WARNING



BEFORE WORKING AROUND A RAISED HOIST, THE HOIST MUST BE SUPPORTED BY THE HOIST PROP.

(SEE HOIST PROP OPERATING INSTRUCTIONS)

FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.

IF THE HOIST PROPS CANNOT BE USED, CONSULT THE MAINTENANCE SECTION OF THE OPERATORS MANUAL FOR THE PROPER PRECAUTIONS.

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SAFETY FIRST

A. Read and understand this operator's manual before operating the hoist.
B. Be sure safety decals are clean and in place.
C. ***Never*** position yourself, or any other person, under any raised portion of the hoist unless the hoist is firmly resting on blocks.
D. ***Never*** operate this unit unless the hydraulic system, including the cylinders and lines, are full of oil and free of air.

Warning: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

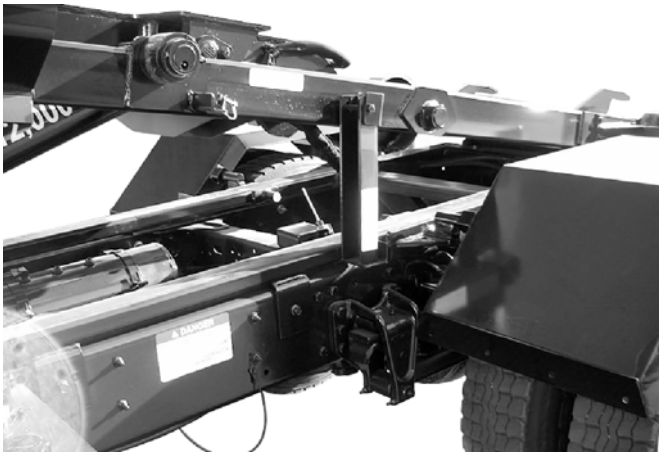
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

E. Check the area for power lines and overhead obstructions.
F. Be sure the area and container are clear of personnel.
G. Do not load, dump or unload a container on uneven ground.
H. Do not move the truck while the hoist and container are raised. A raised load creates a top heavy unstable load.
I. Do not use any method to hold a valve open which will not let the valve automatically close when released.
J. Check the pivot bushing and slide pads for excessive wear.
K. Check all snap rings and shaft securing bolts to be sure they are tight.

OPERATING INSTRUCTIONS

HOOK HOIST CHECK LIST

A. ____ Check hydraulic oil level with all cylinders retracted.
B. ____ Grease all lubrication points.
C. ____ Rollers are free to rotate.
D. ____ Tires are properly inflated.
E. ____ The container hook lock is free to move and works properly.



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HOIST PROPS

Warning: Before working around a raised hoist, the hoist must be supported by the hoist props. Failure to do so could result in serious injury or death.

TO ENGAGE: Remove klick pin keeper and remove lock from the tab allowing the prop to swing down. RAISE HOIST until gravity positions the props above the angle stops on the subframe. Slowly power the hoist down until each prop is in the bottom of the slot. Do not power down past end of slot in the props or damage to props or shearing of the pivot bolts will occur.

TO DISENGAGE: RAISE HOIST and swing props up to metal tab and install klick pin.

Periodically inspect the props and pivot bolts for damage. Replace and/or repair as needed.

GENERAL GUIDELINES FOR OPERATION OF HOIST

LOADING A CONTAINER OR FLAT RACK

Caution: Be sure the area in which the hoist is to be operated is level, clear of personnel, as well as obstacles overhead and on the ground. Operating on an unlevel surface could cause damage to the load or hoist equipment.

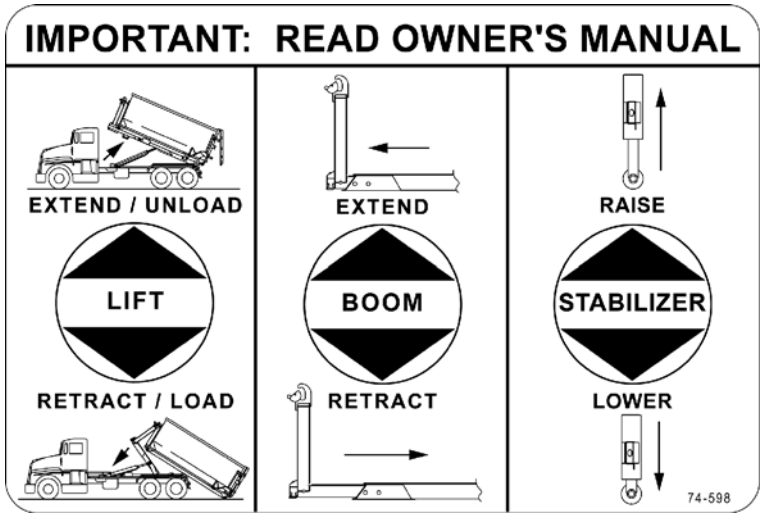
Note: Before loading the flat rack or container onto the hoist, inspect the load to ensure that the materials to be transported are securely fastened to the tie-downs and that all fasteners are in good condition.

Inspect the flat rack or container to ensure that it is clear of all obstructions and persons and that it is not fastened or stuck to the ground.

Caution: Do not attempt to load a container with faulty equipment. Check the condition of the hook safety latch, boom pivot and the inner boom slide pads.

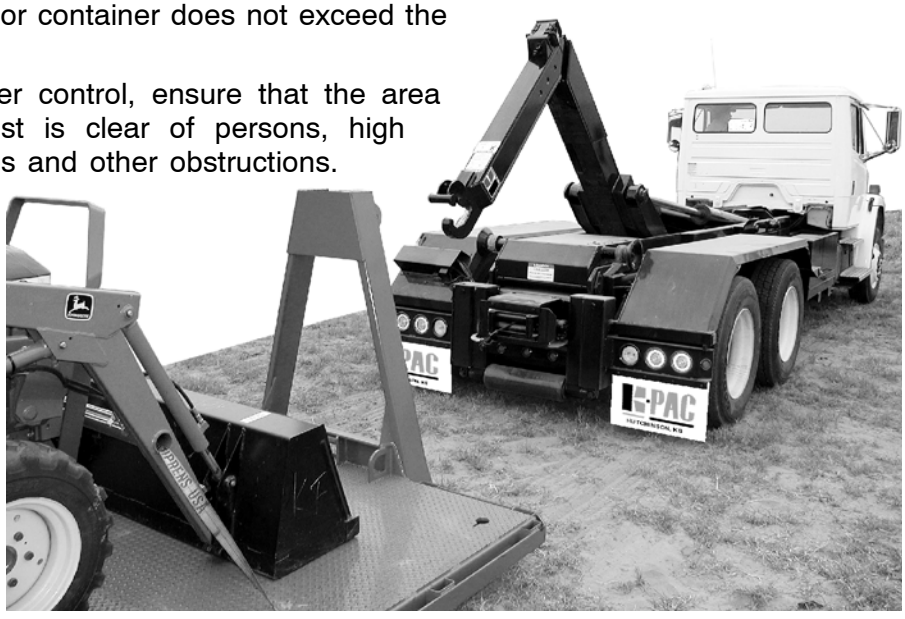
Be sure that the height of the hoist hook is compatible with the container.

Do not lift a container heavier than the rated capacity of the hoist.



Inspect the condition of the "A" Frame and be sure that the combined weight of the pay load and the flat rack or container does not exceed the 32,000# equipment.

Before activating either control, ensure that the area around the hook hoist is clear of persons, high voltage overhead wires and other obstructions.



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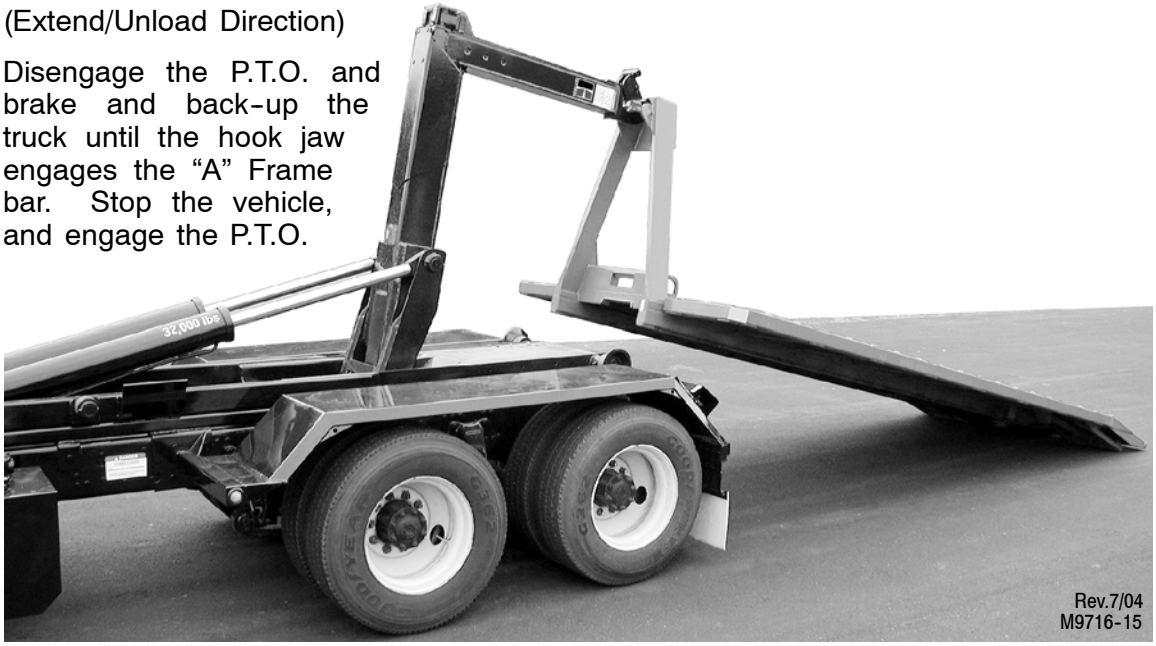
A. Line up the hoist truck boom with the rack or container hook. If this is not possible, the rack or container can be picked and loaded from within a 30° arc, either side of center.

B. Engage the parking brake, depress the clutch and engage the P.T.O. Activate the In-Cab Control to slide the Hook Arm back to the **fully retracted position (this is very important)**. This also disengages the locking for dumping.

C. Activate the In-Cab Control to pivot the Hook Arm from the back of the cab to the container "A" Frame behind the truck. (Extend/Unload Direction)

D. Disengage the P.T.O. and brake and back-up the truck until the hook jaw engages the "A" Frame bar. Stop the vehicle, and engage the P.T.O.



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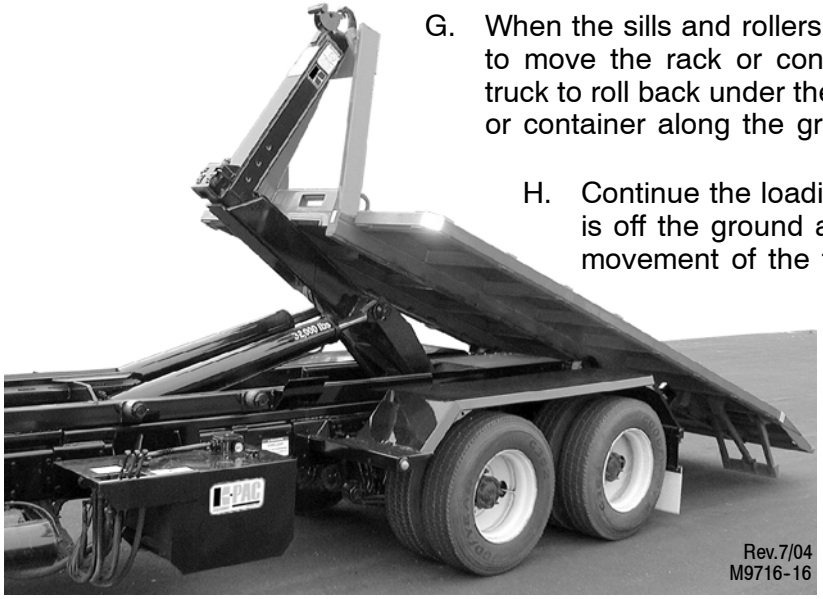
If truck is equipped with stabilizer option, and you are loading a heavy load, lower stabilizer to the ground, stabilizing back end of truck.

E. Push the rotation control to move the Hook Arm forward (Retract/Load) until the bottom of the rack or container is approximately 10 inches above the guide rollers at the back of the truck. The operator must steer while loading until the guide rollers align with the sills of the rack or container.

F. If the sills on the bottom of the rack or container are not in line with the guide rollers and the truck, the operator must reposition.



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G. When the sills and rollers line up, continue to activate the control to move the rack or container onto the hoist. By allowing the truck to roll back under the load, dragging the rear end of the rack or container along the ground can be minimized.

H. Continue the loading procedure until the rack or container is off the ground and apply the brake to eliminate further movement of the truck.

The Rotation Control should be activated until the sills of the rack or container are in full contact with the hoist frame.

I. Activate the Hook Arm Control to extend the Hook Arm which will pull the rack or container toward the truck cab to engage the rack or container sills with the two safety locks on the hoist frame.

J. **Raise stabilizer** after loading is completed.

K. Disengage the P.T.O. Observe road and weather conditions and drive with the caution required for a vehicle under load.

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DUMPING A CONTAINER

Caution: Be sure that the truck is on firm level ground before dumping. If one side of the load breaks loose in this high center of gravity position, a truck on unstable footing may roll over on its side.

A. When the path is clear, back the K-PAC Hoist to the dumping site.

B. Put the transmission in the neutral position, and engage the P.T.O. or switch the hydraulic pump on and engage the truck brake.

C. Be sure dumping path is clear including overhead obstructions, and that the truck is on firm level ground.

D. Release door(s) on container.

E. Inner boom should be fully extended when preparing to dump. NEVER retract Hook Arm past being fully engaged in locking mechanism on hoist.

Caution: This hoist dumps the load from a container at a very steep angle which raises the truck's center of gravity. Use caution when dumping a sticky or frozen load to prevent the truck from rolling over.

F. Activate the hoist controls raising hoist to maximum dumping angle.

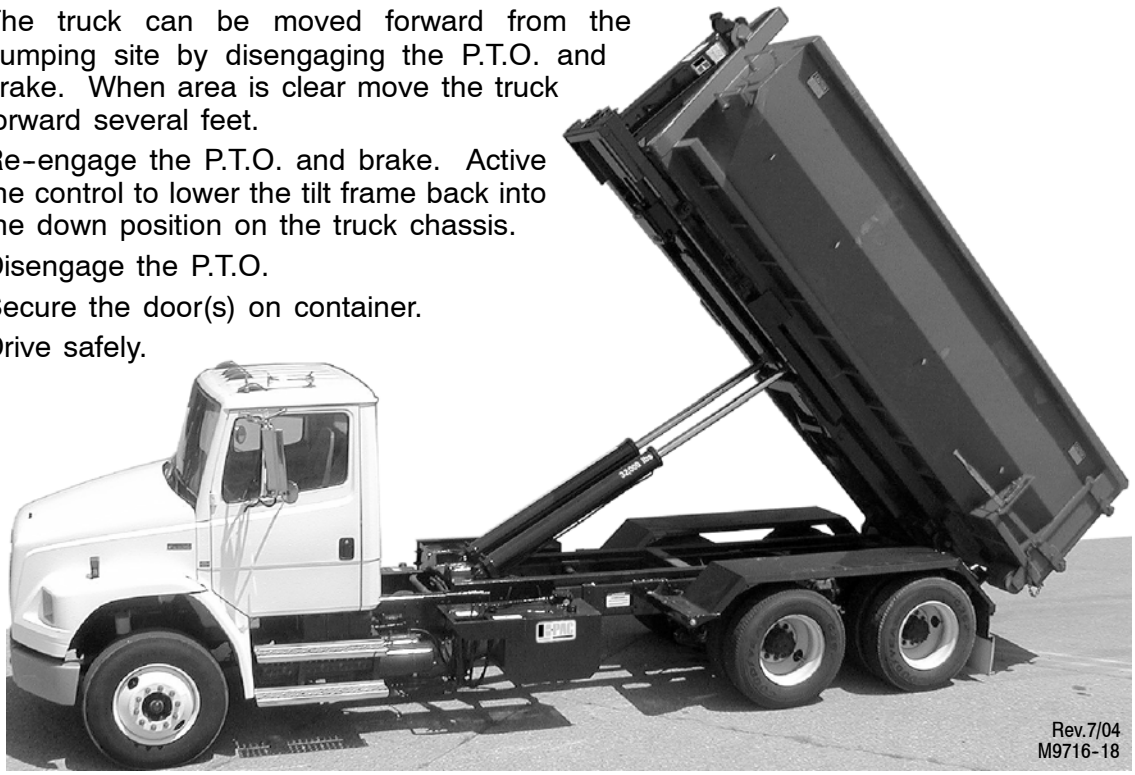
G. The truck can be moved forward from the dumping site by disengaging the P.T.O. and brake. When area is clear move the truck forward several feet.

H. Re-engage the P.T.O. and brake. Active the control to lower the tilt frame back into the down position on the truck chassis.

I. Disengage the P.T.O.

J. Secure the door(s) on container.

K. Drive safely.



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Caution: Do not pull forward until the hoist is lowered to the full-down position.

UNLOADING FLAT RACKS OR OTHER CONTAINERS FROM THE HOIST SYSTEM

A. Position the rear of the truck approximately 10 feet in front of the desired resting place for the rack or container. This will allow for the distance the rack or container will travel during the unloading procedure.

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B. Put the truck transmission in neutral and engage the parking brake.

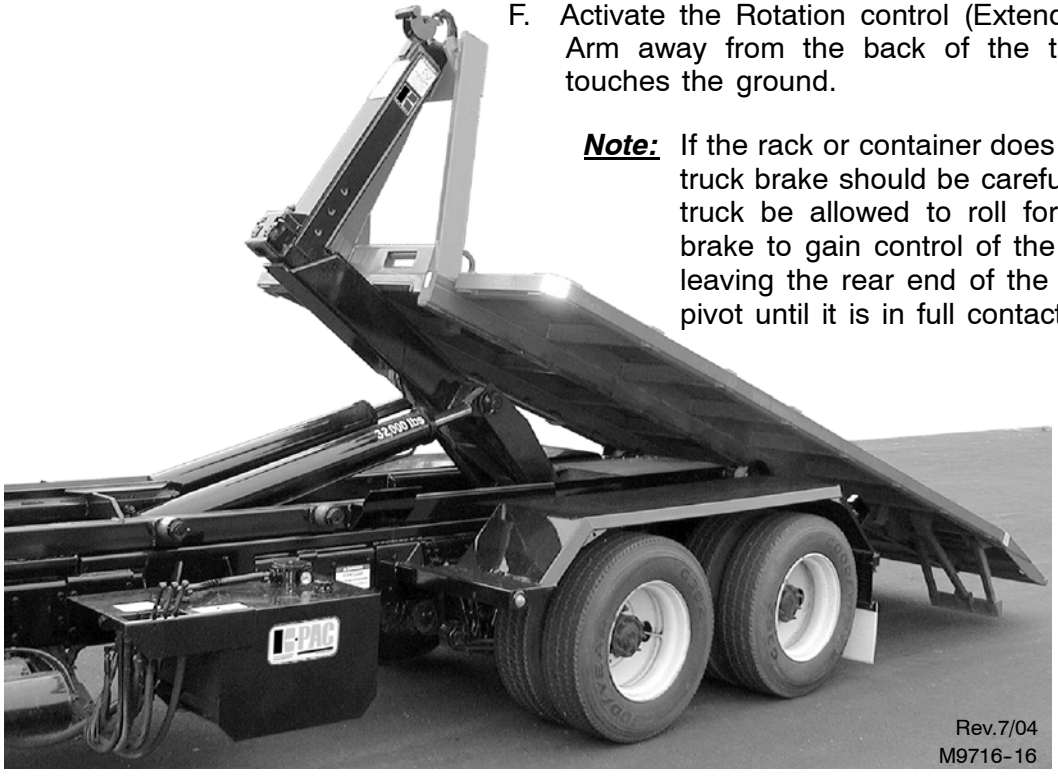
C. Inspect the desired area for obstruction both around and overhead and instruct all persons to stand clear of the equipment.

D. Inspect the load on the truck to ensure that it will remain stable during the unloading procedure.

E. Engage the truck's P.T.O. and activate the Hook Arm Control to retract the Hook Arm completely. This procedure will push the rack or container away from the back of the truck cab, and disengage the locking mechanism.

F. Activate the Rotation control (Extend) to pivot the Hook Arm away from the back of the truck, until the load touches the ground.

Note: If the rack or container does not have rollers, the truck brake should be carefully released and the truck be allowed to roll forward, (use the foot brake to gain control of the forward movement) leaving the rear end of the rack of container to pivot until it is in full contact with the ground.



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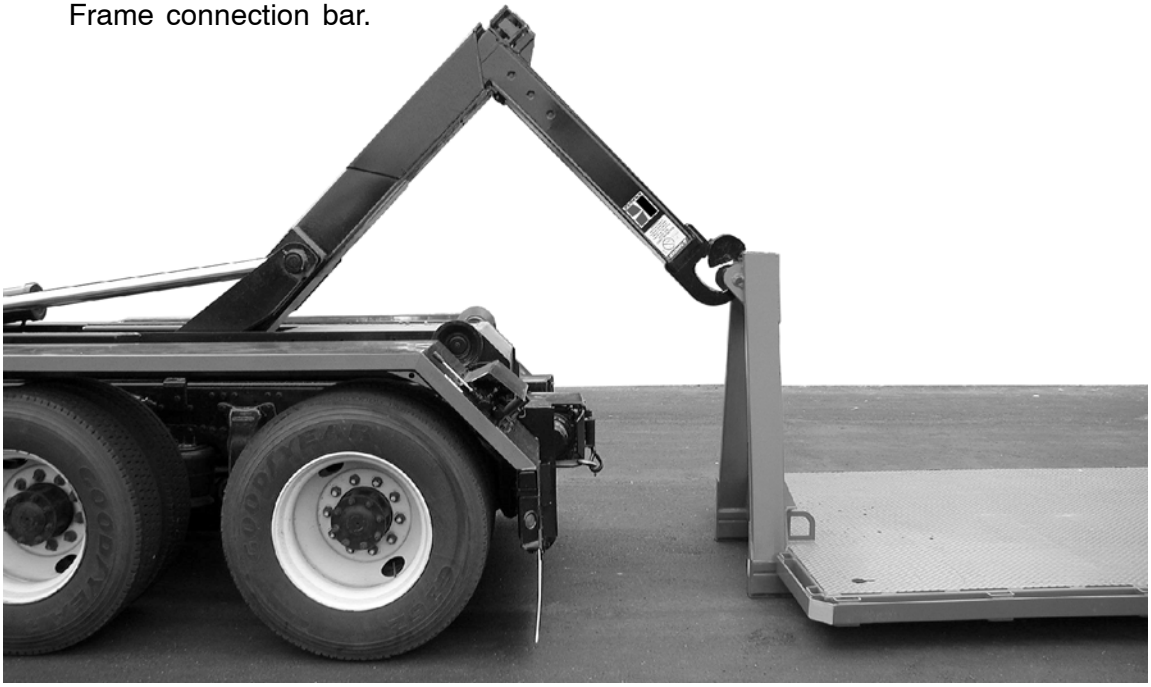
G. Continue to pivot the hook arm until the hook can be disconnected from the “A” Frame connection bar.



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H. When the Hook Arm hook is clear of the “A” Frame Connection Bar, disengage the P.T.O. and after ensuring that the path is clear, move the truck forward about three feet.

I. Re-engage the P.T.O. and parking brake and activate the control to pivot the Hook Arm fully forward until it reaches its resting position.

J. Activate the Hook Arm Control and extend the Hook Arm towards the truck cab.

WINCH OPERATION (OPTIONAL EQUIPMENT)

<u>Caution</u>: Set brake before operating winch.

The winch controls are located at the rear of the truck, on the driver side.

There are two levers; the outside lever operates the winch under power and the inside lever operates the free wheel control on the winch.

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To operate the winch turn the lever back per illustration on winch.

To lock the free wheel lever in the free wheel position, turn lever forward per illustration on winch.

The winch cable can then be pulled out to the desired length without restraint.

Note: The cable should never be pulled out beyond a single wrap of cable on the drum.

The winch can be returned to the power position by rotating lever to back per winch illustration.

To power the winch cable in or out, be sure that the free wheel lever is locked in the power position.

To retract the cable hydraulically, pull the power control lever.

To extend the cable hydraulically, push the power control lever.

The cable will stop when the control is in the neutral position.

Read the winch manufacturer's instructions for more information on the winch operation.

Note: Never jam any of the Hoist Hydraulic Controls into the operating position.

FLAT RACK OPERATION

Note: Do not concentrate loads on small areas of the flat rack. Concentrated loads should be distributed by placing planks of hardwood on the deck of the rack before placing the load.

Magnetic tail lights may need to be installed on the rear end of the flat rack when being transported on the hoist in order to comply with vehicle lighting regulations.

Loading a Vehicle onto the Flat Rack

A. Back the hoist approximately 20 feet in front of the vehicle to be transported. Disconnect and remove the magnetic tail lights (if used).

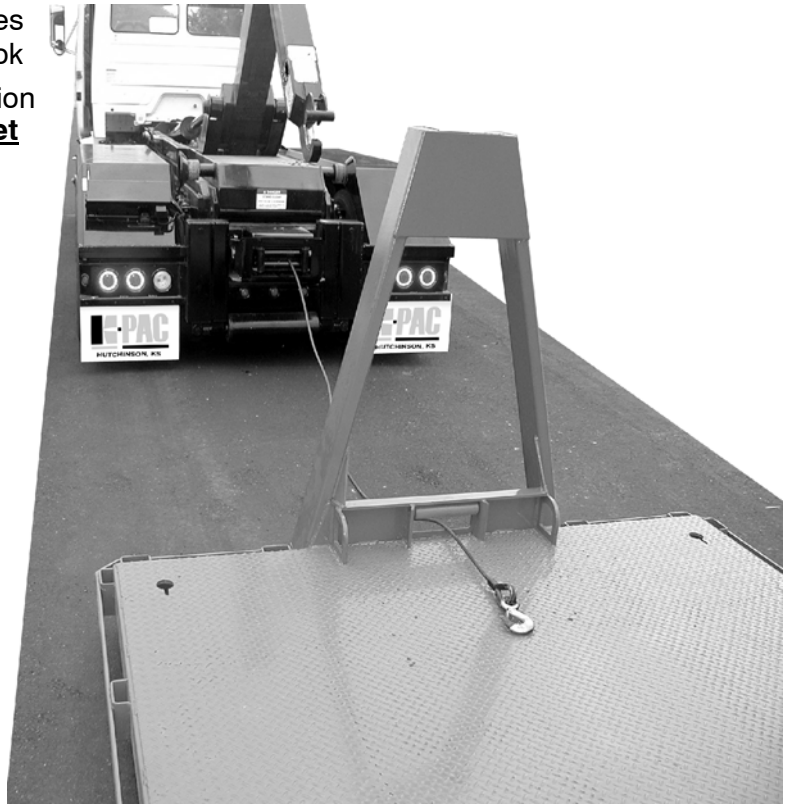
B. Unload the flat rack from the hoist according to the normal unloading procedures, and leave the hook engaged to the "A" Frame Connecting Bar or disconnect if necessary.

Note: If the truck or flat rack slides when loading reconnect hook

C. Place the truck's transmission in the neutral position, **set the parking brake** and engage the P.T.O. Place the winch into the free wheel position.

D. Pull the winch hook and cable through the guide slot located at the front of the rack and out until the hook reaches the vehicle.

E. Connect the hook so that the vehicle can be loaded in the manner recommended by the vehicle manufacturer.



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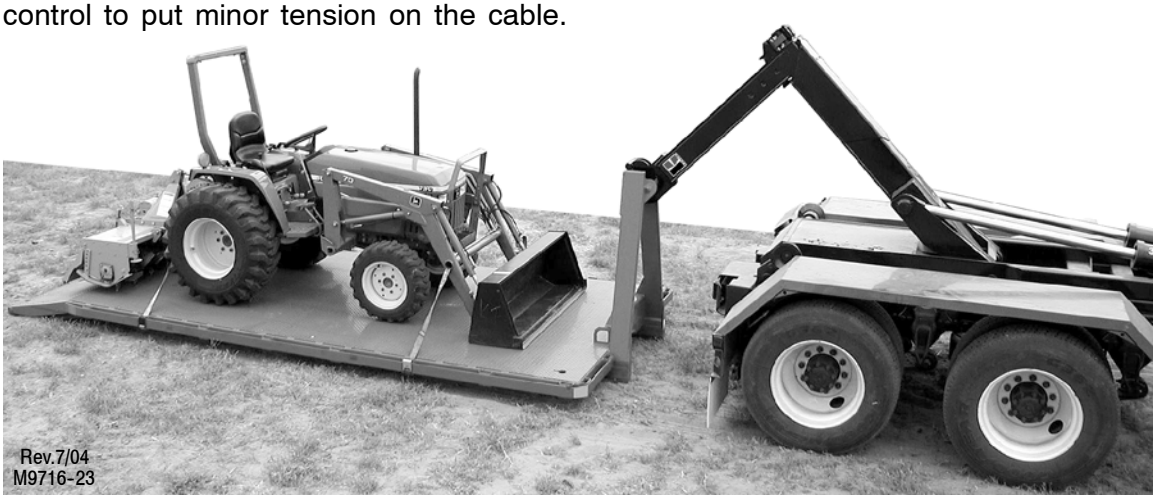
F. Return to the winch control, disengage the free wheel and activate the winch cable control to put minor tension on the cable.



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G. If the vehicle to be loaded is disabled, straighten the wheels to ensure proper loading, place the transmission in neutral and release the parking brake.

H. Return to the winch and operate the control to load the vehicle onto the flat rack.

I. Connect tie down straps or chains to the front of the loaded vehicle and secure them to the front of the rack, making sure to remove as much slack from the tie downs as possible.

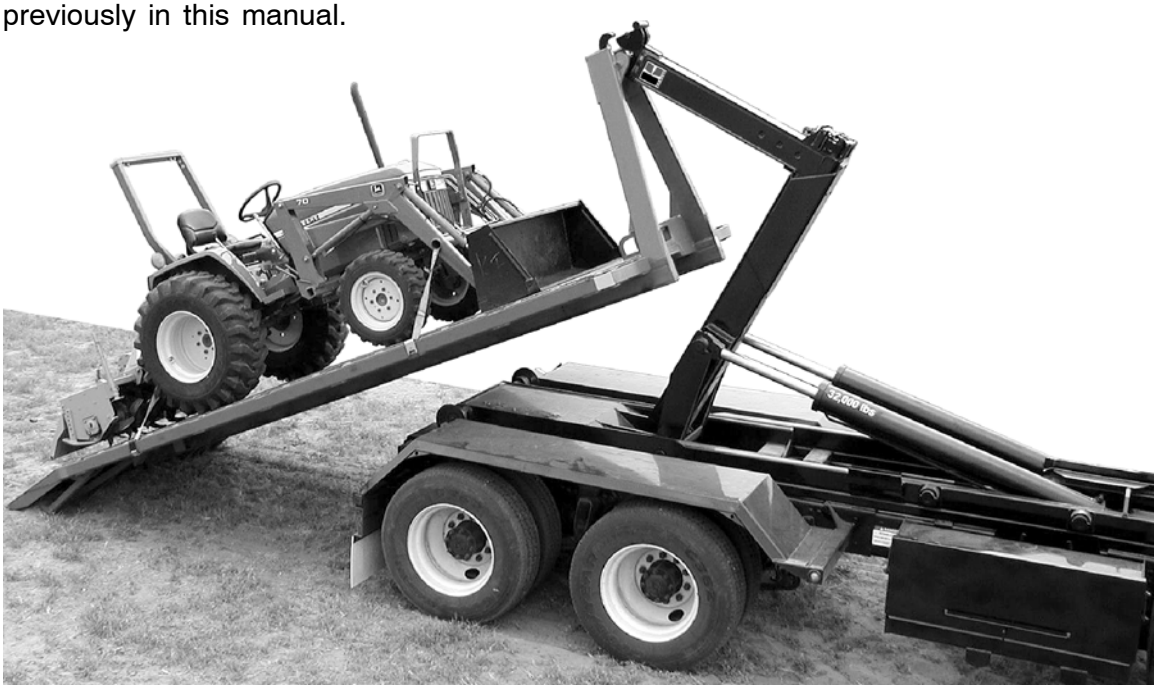
J. Disconnect the winch cable and hook from the vehicle and retract the cable completely.

K. Attach a strap or chains to the rear of the loaded vehicle and connect the opposite end of the strap to the slots on the rear of the flat rack deck.

L. Check to ensure that the loaded vehicle is properly and tightly secured.

M. Put the transmission of the vehicle to be transported in park (if automatic) or in gear (if manual) and set its brake.

N. Continue to load the flat rack onto the K-PAC hoist in the normal manner as described previously in this manual.



Rev.7/04
M9716-24

O. Re-examine the tie downs and reconnect the magnetic tail lights if needed.
Note: Amber beacon lights may be necessary in some states when transporting vehicles.

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M9716-25

K-PAC Warranty Information

Congratulations on the purchase of the KP816 Hook Hoist.

K-PAC Equipment, Division of Krause Corporation, takes pride in engineering and manufacturing products which are of the finest quality and highest standard. As a result, we stand behind any K-PAC Equipment product or component claimed to be defective during the warranty period. To avoid delays with the service process, please read the warranty instructions (in the first section of this manual) at the time of the vehicle purchase; and complete and return the supplied warranty card.

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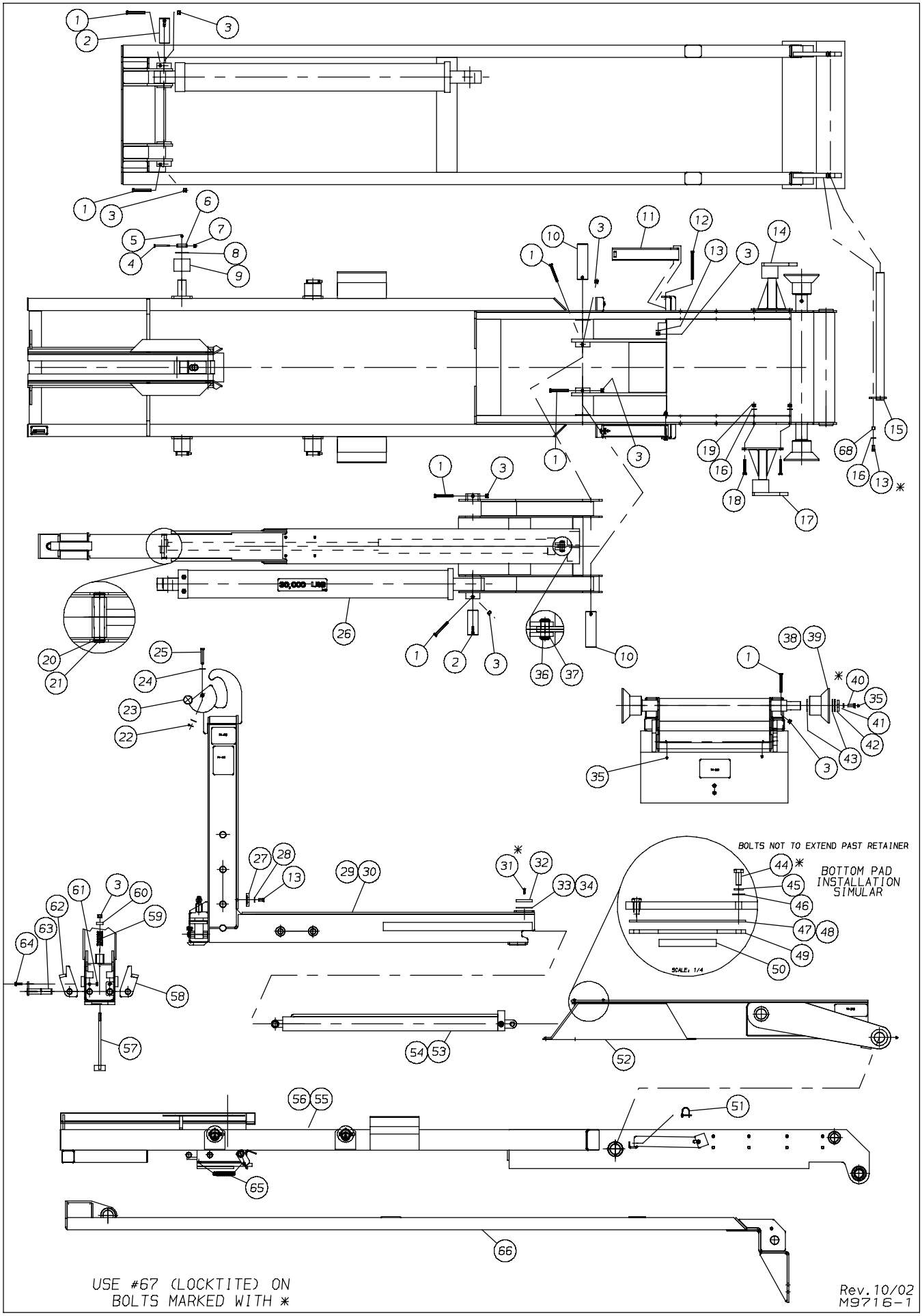
Notes


BOLTS NOT TO EXTEND PAST RETAINER
BOTTOM PAD INSTALLATION SIMULAR
SCALE: 1/4
USE #67 (LOCKTITE) ON BOLTS MARKED WITH *
Rev.10/02
M9716-1

MAIN FRAME ASSEMBLY

FOR MODELS - 138CA, 156CA 1/07

Item	Part Number	Part Description	Qty.
1	62-351	1/2NC x 4-1/2" GD5 Cap Screw	7
2	9615-00-13	Lift Cylinder Pin	4
3	63-108	1/2NC Nylon-Top Lock Nut	8
4	62-123	3/8NC x 3-1/2" GD5 Cap Screw	4
5	65-101	1/8" STD. Zerk	4
6	9274-415-3	Bolt Collar (Roller)	4
7	63-134	3/8NC Nylon-Top Lock Nut	4
8	64-154	Machine Bushing	4
9	9274-412-0	Outside Roller Assembly	4
10	9716-0-3	Outer Boom Pivot Pin	2
11	9716-0-14	Prop	2
12	62-547	1/2NC x 6-1/2" GD5 Cap Screw	2
13	62-569	1/2NC x 1-1/2" GD5 Cap Screw	2
14	9716-240-0	Hold Down Weldment, Right	1
15	9716-27-0	Main Pivot Shaft Weldment	1
16	64-108	1/2" STD. Flat Washer	9
17	9716-241-0	Hold Down Weldment, Left	1
18	62-462	1/2NC x 3-1/4" GD5 Cap Screw	8
19	63-107	1/2NC Lock Nut	8
20	99-197	Retainer Ring 1-1/4"	2
21	9716-00-12	Rod Pin, Extension Cylinder	1
22	60-701	5/32" DIA. x 1-1/4" Cotter Pin	1
23	9716-355-0	Hook Lock Weldment	1
24	64-146	5/8" SAE Flat Washer	2
25	60-272	5/8" DIA. x 3-1/2" Clevis Pin	1
26	23-707	Hydraulic Cylinder 6" x 55-1/2"	2
27	82-242	Shock Pad	1
28	64-162	1/2" SAE Flat Washer	1
29	9716-354-0	KP716 54" Inner Boom (138/156)	1
30	9716-362-0	KP716 62" Inner Boom (138/156)	1
31	★ 62-764	3/8NC x 3/4" Flat Head Countersunk Allen Screw	4
32	★ 9610-120-5A	Inner Boom Pad (Large)	2
33	★ 9610-00-10	Shim	2
34	★ 9610-00-14	Shim	2
35	65-113	Zerk 1/4UNF	6
36	9610-120-7	Cylinder Pin, Extension Cylinder	1
37	99-201	Retainer Ring 1"	2
38	9606-108-8	Roller Shaft	1
39	9606-105-0	Guide Roller Assembly	2
40	9606-108-10	Special Bolt	2
41	64-109	5/8" STD. Lock Washer	2
42	9606-108-9	Retainer Washer	2
43	64-199	3 x 2 x 10 Ga. Machine Bushing	6
44	★ 62-803	3/8NC x 7/8" GD5 Cap Screw	8
45	★ 64-103	3/8" STD. Lock Washer	8
46	★ 64-165	3/8" SAE Flat Washer	8
47	★ 9610-00-3	Shim .06 (Pad Retainer)	2
48	★ 9610-00-4	Shim .12 (Pad Retainer)	2
49	★ 9710-0-9	Pad Retainer	2
50	★ 9610-120-2A	Outer Boom Pad	2
51	60-109	P.T.O. Lock Pin	2
52	9716-438-0	Outer Boom Weldment	1
53	23-721	Hydraulic Cylinder, 3" x 35"	1
54	23-722	Hydraulic Cylinder, 3" x 48"	1
55	9716-238-0	Tilt Frame Weldment (138)	1
56	9716-256-0	Tilt Frame Weldment (156)	1
57	9615-303-0	Main Pin Weldment	1
58	9716-301-0	Lock Plate Weldment, Left	1
59	76-218	Spring, 1" OD x .125"W x 3.00"L	1
60	9615-00-6	Spring Retainer	1
61	63-167	5/16NC Nylon-Top Lock Nut	2
62	9716-302-0	Lock Plate Weldment, Right	1
63	9615-304-0	Lock Pin Weldment	2
64	62-432	5/16NC x 1" GD5 Cap Screw	2
65	76-180	Spring (painted)	2
66	9716-638-0	Main Frame Weldment	1
67	99-158	Locktite (250ml)	
68	5210-563-3	Coupler	1

★ Item included in 9716-84-0 Pad & Shim Kit

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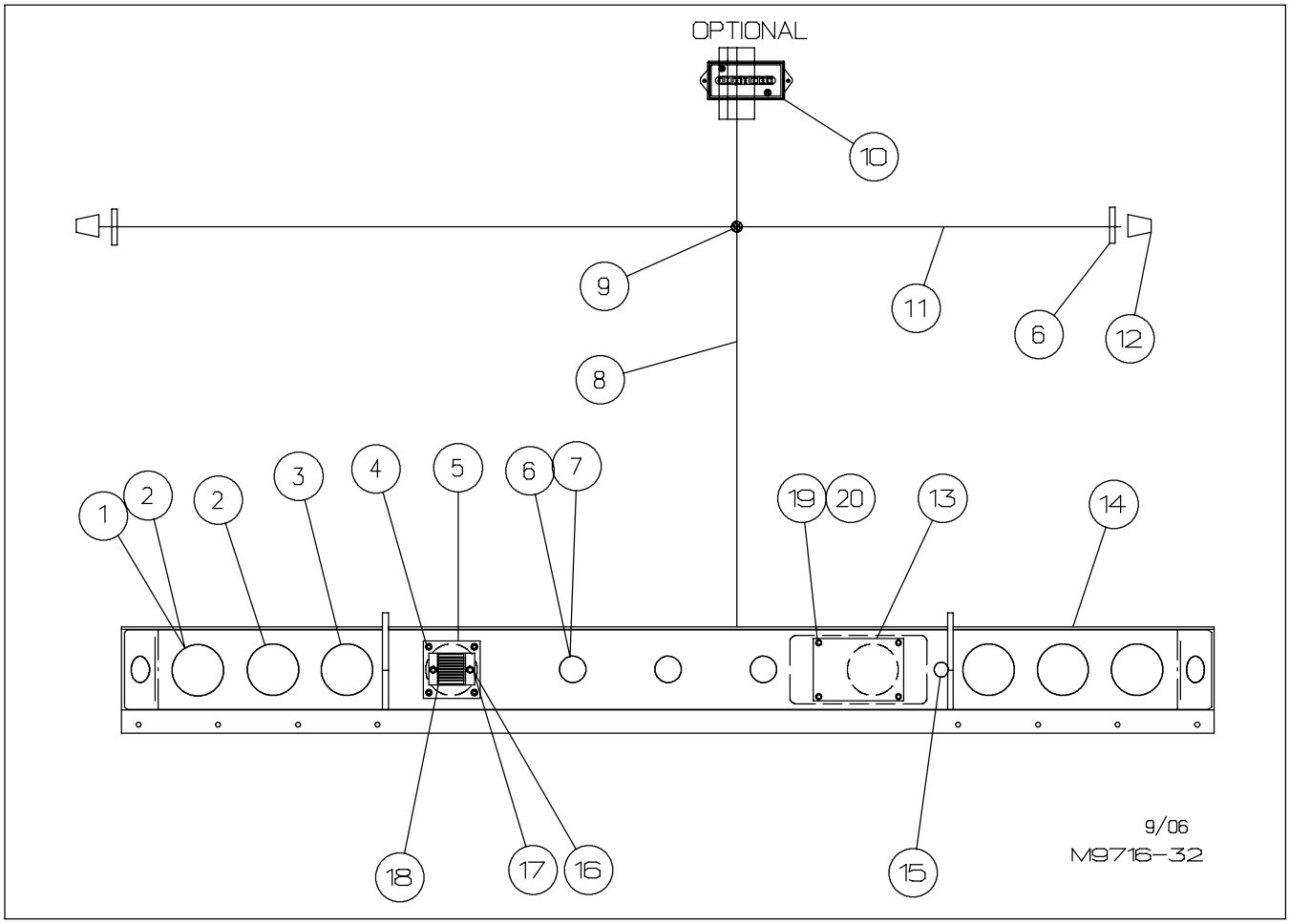
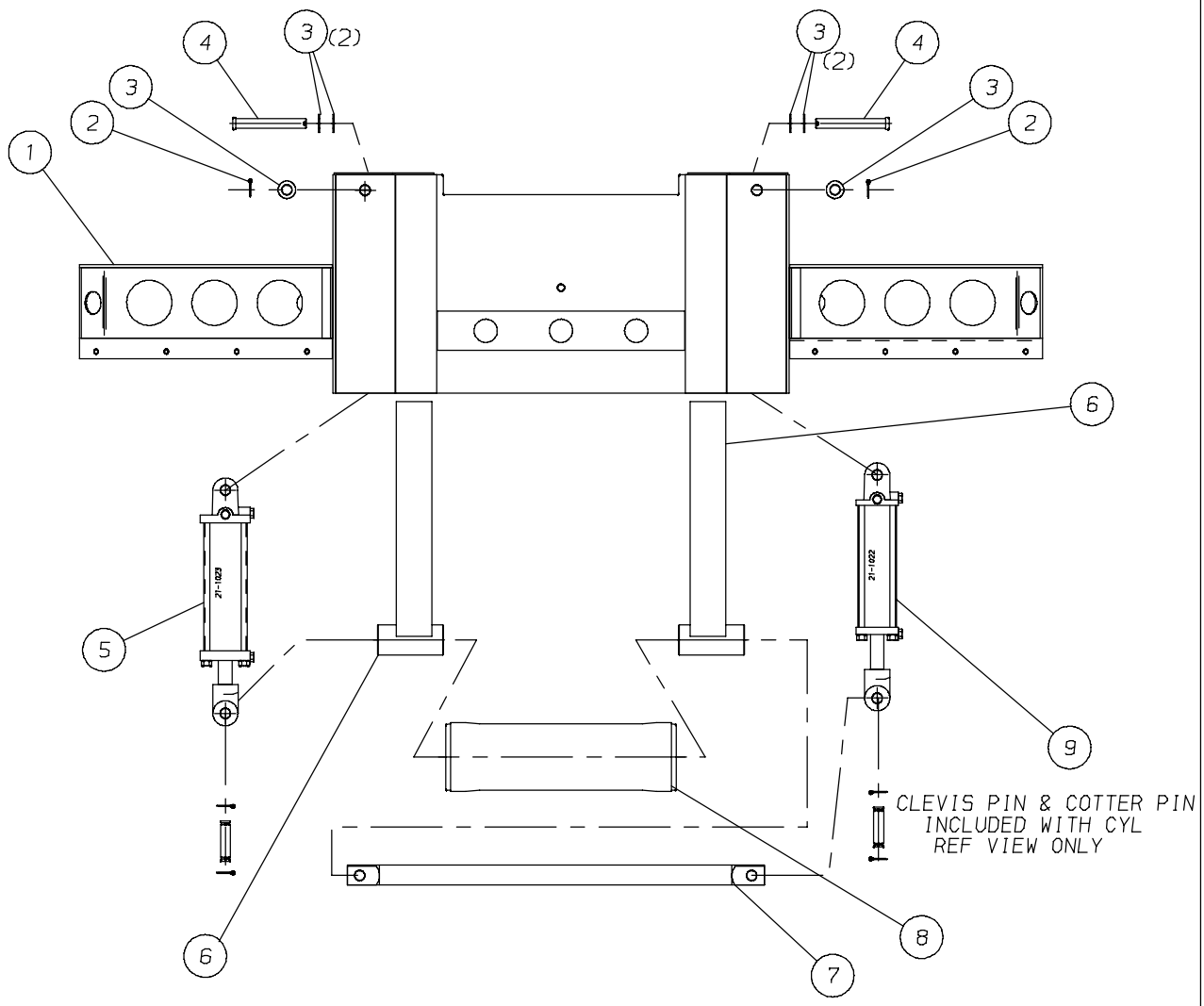
LIGHTED BUMPER PARTS



FOR MODELS - KP816 1/07

Item	*Part Number*	*Part Description*	*Qty.*
1	79-237	4.25" Dia Rubber Grommet	6
2	79-234	Lamp - Stop/Tail/Turn	4
3	79-233	Lamp - Back-up	2
4	62-425	3/8NC x 3/4" GD8 Hex Washer Thread Forming Screw	4
5	9274-0-461	Bumper Cover	1
6	79-236	2" Dia. Rubber Grommet	7
7	79-235	Lamp - 2" Dia. Clearance (Red)	5
8	79-253	Wiring Harness, Rear Bumper	1
9	79-293	Splice Connector 14 Ga to 18 Ga	4
10	79-509	Junction Box (Option)	1
11	79-294	Wiring Harness - 30"	2
12	79-296	Beehive Light - 2" Dia. Sealed	2
13	9274-0-451	Cover Plate	1
14	9274-546-0	Bumper Weldment	1
15	79-254	Lamp - LPL Courtesy	1
16	62-362	5/16NC x 3/4" Cap Screw	2
17	63-139	5/16NC Lock Nut	2
18	79-250	Back-Up Alarm	1
19	82-340	Grommet Nut, 1/4"	4
20	62-701	1/4NC x 1" Hex Washer Thread Forming Screw	4

STABILIZER



IMPORTANT:

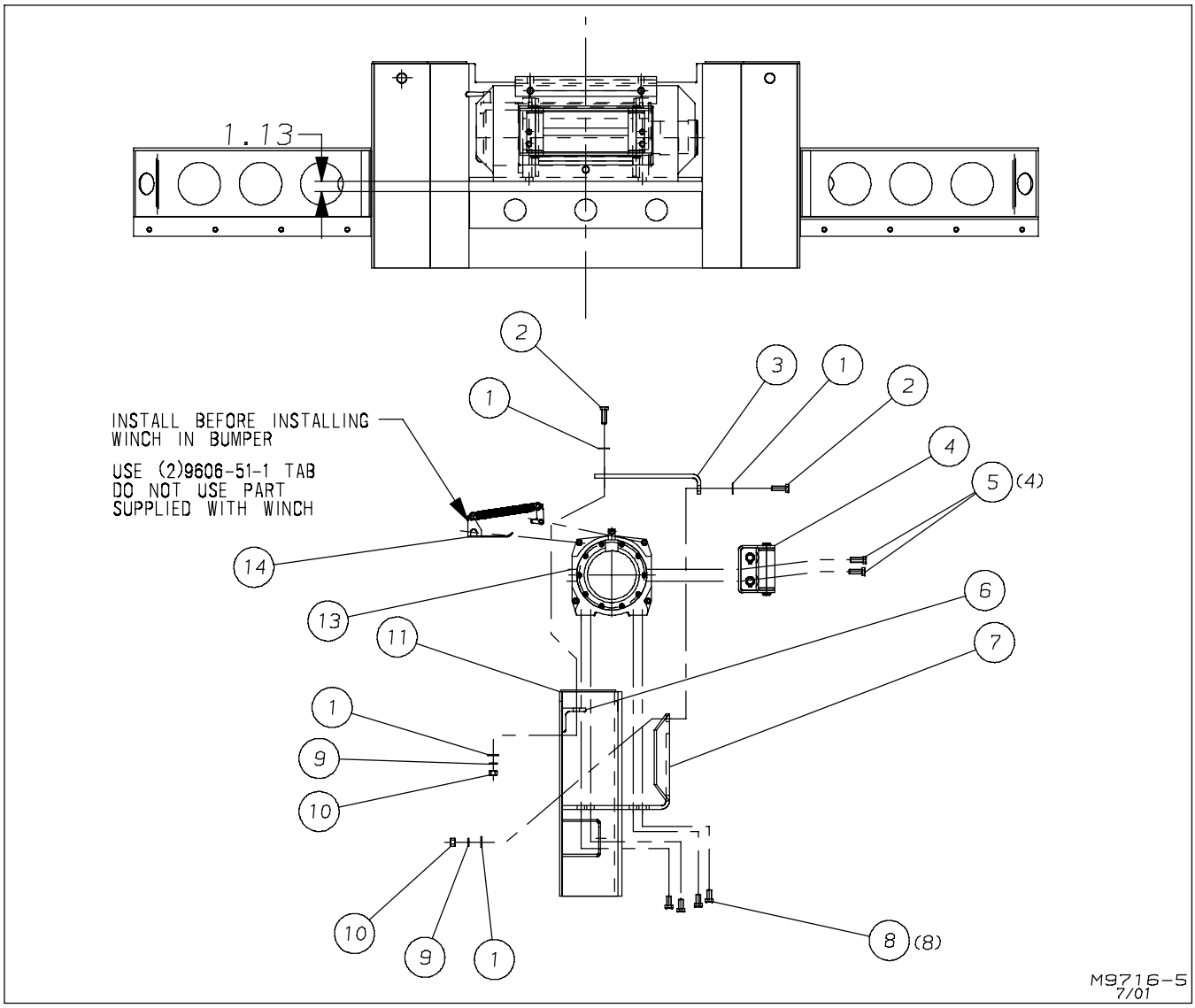
STABILIZER CYLINDER MUST BE RUN AND CYCLED SEVERAL TIMES TO GET THEM IN PHASE BEFORE HOOKING TO ROLLER SHAFT. DAMAGE CAN OCCUR TO SHAFT IF THIS IS NOT DONE.

M9716-4
7/01

FOR MODELS - 1/07

Item	*Part Number*	*Part Description*	*Qty.*
1	9716-850-0	Stabilizer Main Weldment	1
2	★	3/16" DIA. x 1-3/4" Cotter Pin	2
3	64-119	1" STD. Flat Washer	6
4	60-271	Clevis Pin	2
5	21-1023	3-3/4" x 10" Ret/Series Hydraulic Cylinder	1
6	9716-855-0	Stabilizer Slide Weldment	2
7	9716-0-1	Stabilizer Roller Shaft	1
8	9274-26-0A	Rear Roller Assembly	1
9	21-1022	3-1/2" x 10" Ret/Series Hydraulic Cylinder	
★ Included in cylinder assembly see pages P28 and P29			

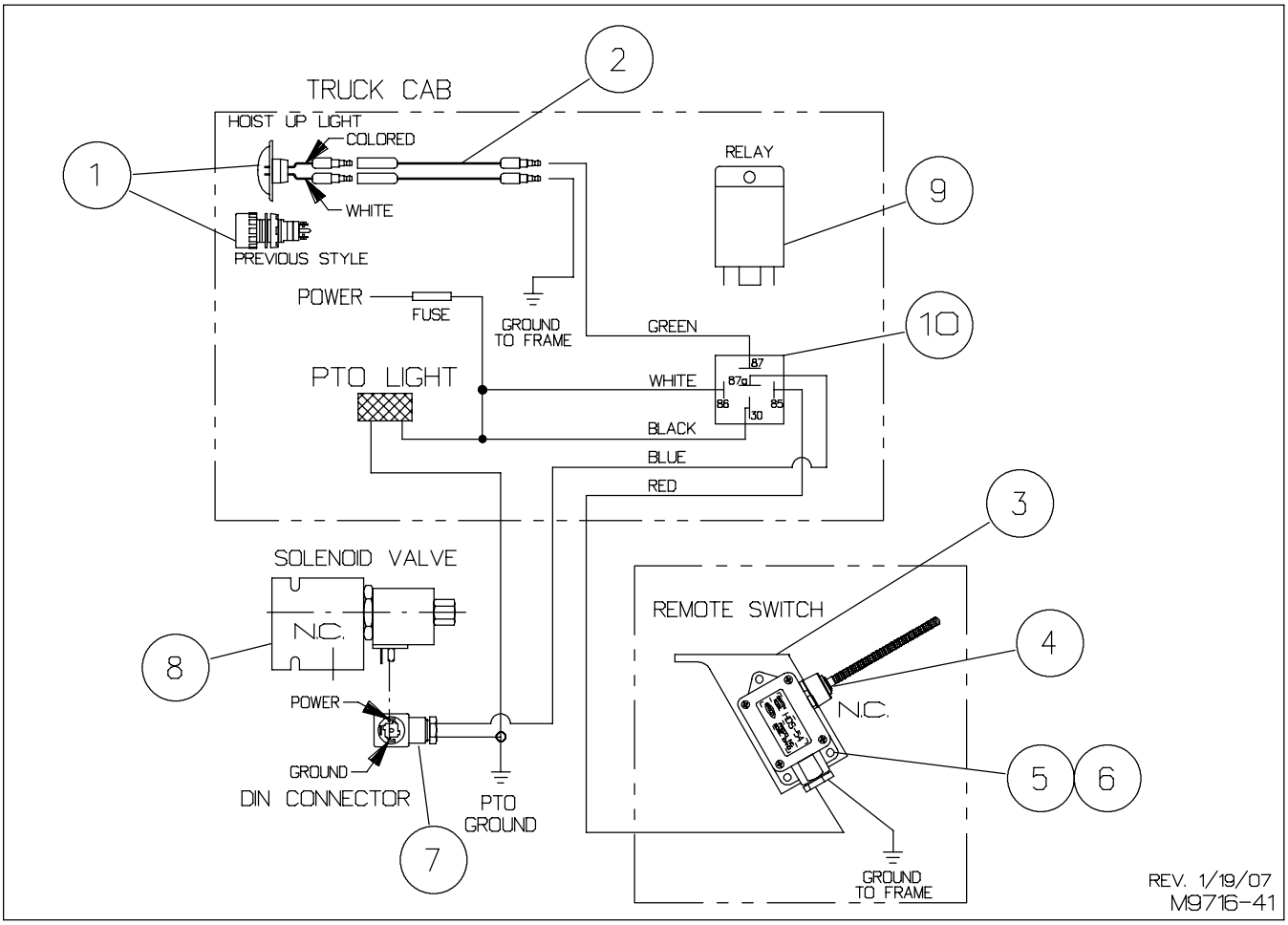
WINCH



FOR MODELS - 1/07

Item	*Part Number*	*Part Description*	*Qty.*
1	64-108	1/2" STD. Flat Washer	8
2	62-569	1/2NC x 1-1/2" GD5 Cap Screw	4
3	9716-860-2	Winch Cover Plate	1
4	82-295	Hd. Roller Fairlead for 10" Drum	1
5	62-805	M12 x 1.75 x 35 x 8.8 Cap Screw	4
6	9625-0-18	Angle - Winch Cover	1
7	9716-860-1	Winch Mount / Cover	1
8	62-815	M12 x 1.75 x 25 x 8.8 Cap Screw	8
9	64-107	1/2" STD. Lock Washer	4
10	63-106	1/2NC Hex Nut	4
11	9716-850-0	Stabilizer Main Weldment	1
12			
13	82-250	12,000# Winch (30-286 Series)	1
14	82-251	Tensioner Wire Rope Kit 10" Drum	1

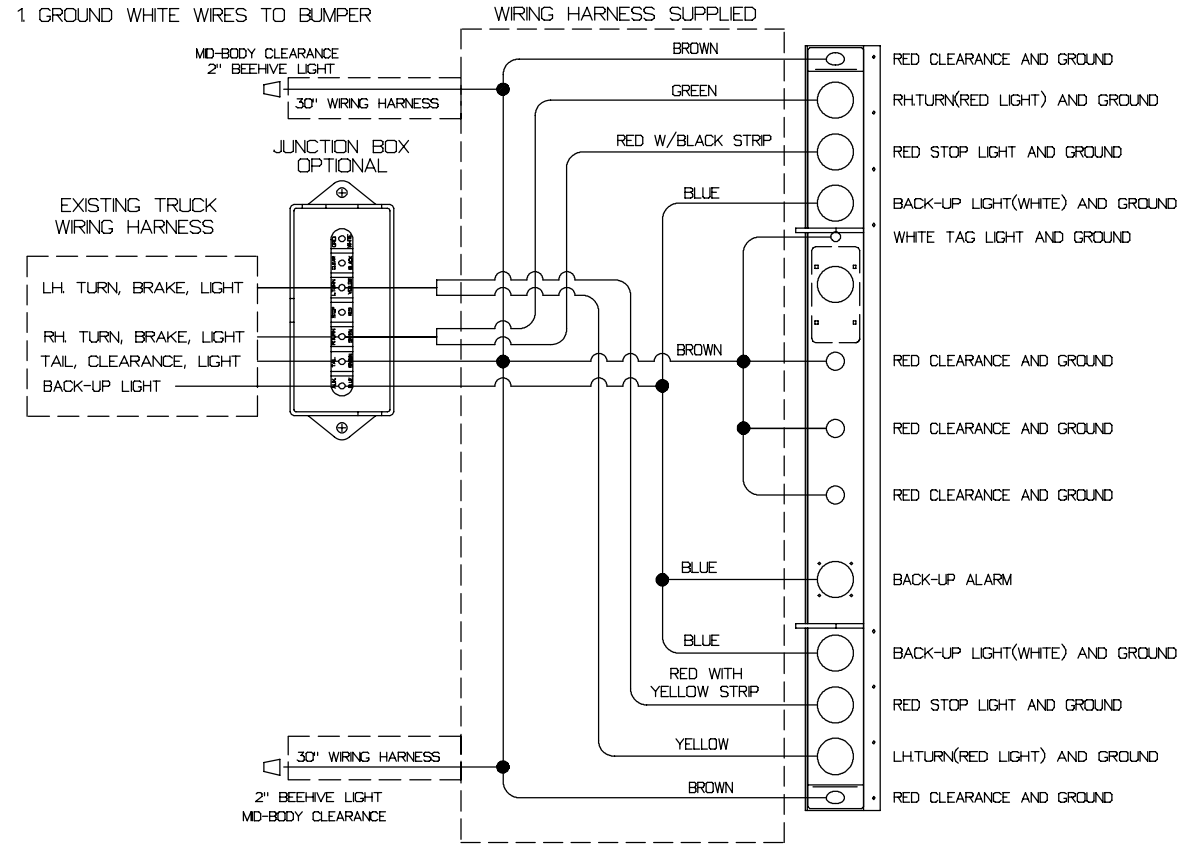
MISCELLANEOUS ELECTRICAL PARTS

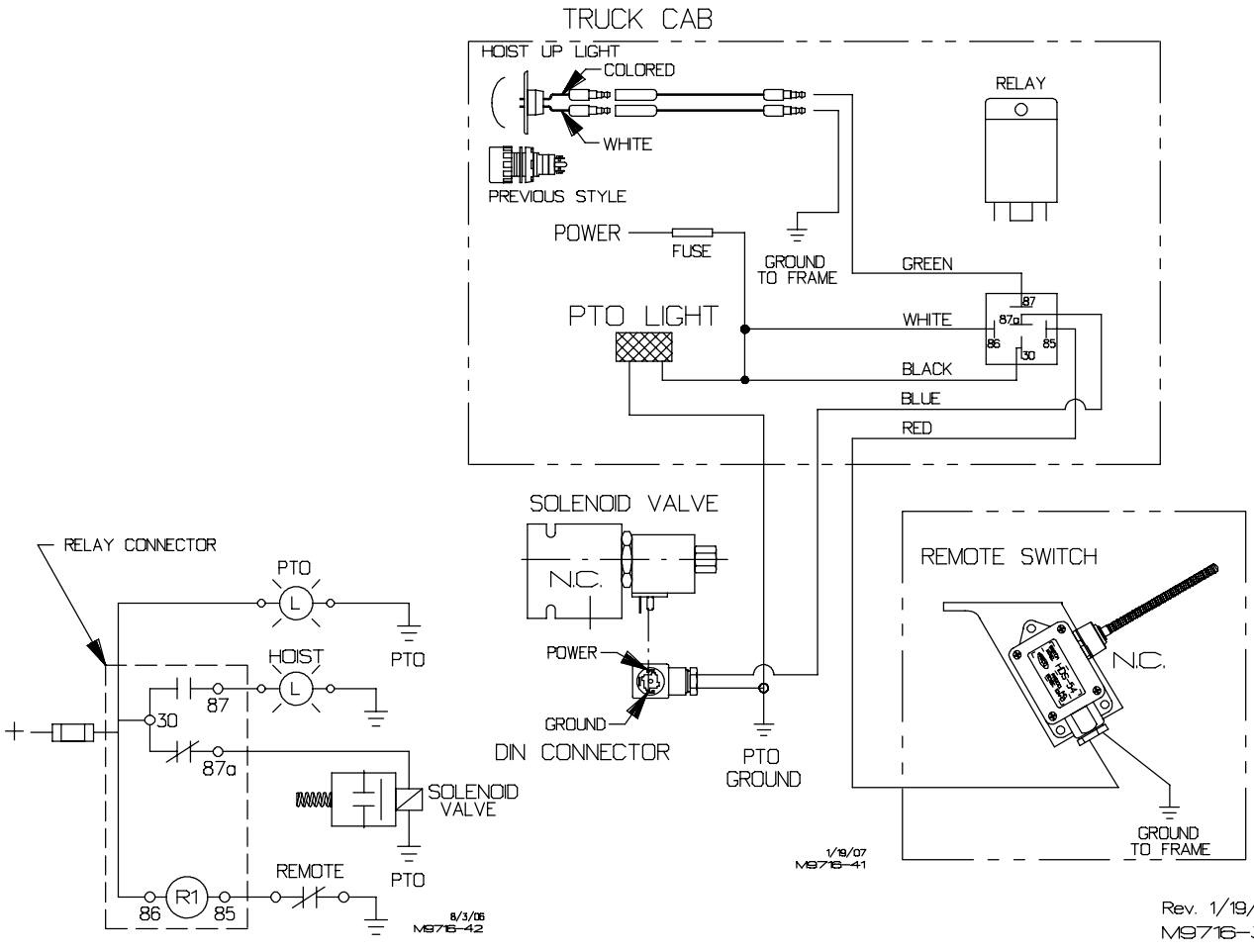


FOR MODELS - KP816 2/07

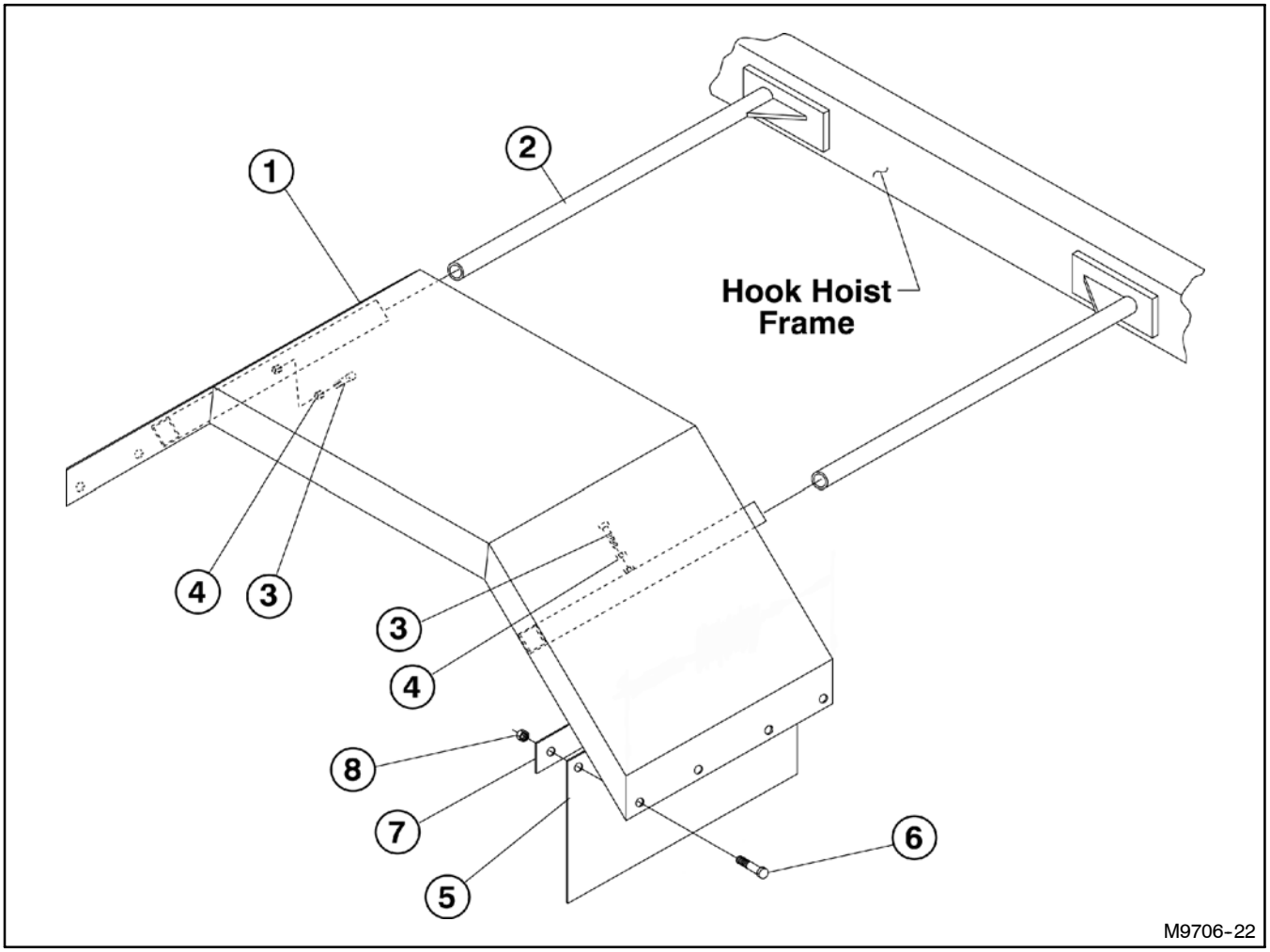
Item	*Part Number*	*Part Description*	*Qty.*
1	79-580	Hoist Up Light. LED (requires 3/4" DIA. hole)	1
	79-269	Hoist Up Light (requires 7/8" DIA. hole)	1
2	79-581	Pigtail - 16 Ft.	2
3	9716-0-30	Bracket - Safety Switch	1
4	79-248	Remote Switch	1
5	62-422	1/4NC x 1-1/2" GD5 Cap Screw	3
6	63-141	1/4NC Hex Flange Serrated Nut	3
7	79-496	Din Plug	1
8	79-563	Solenoid Valve (40 GPM)	1
9	79-564	12V Relay 30 Amp	1
10	79-565	12V Relay Connector w/ Wire	1

ELECTRICAL SCHEMATIC





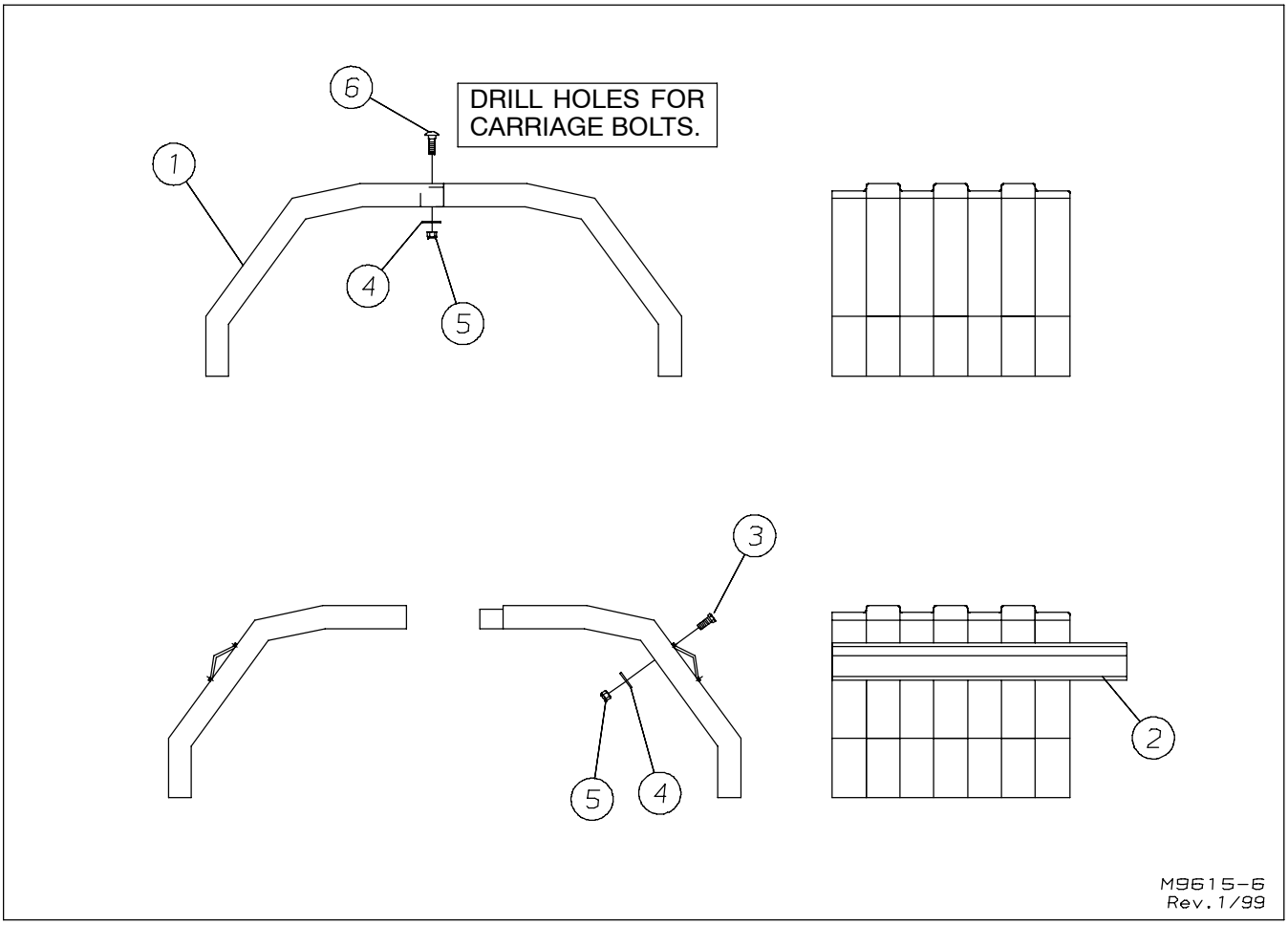
SINGLE STEEL FENDERS



FOR MODELS - ALL 1/07

Item	*Part Number*	*Part Description*	*Qty.*
1	9305-55-0A	Standard Fender Weldment - (Width = 25-1/2")	1
	9305-57-0A	Narrow Fender Weldment - (Width = 22-1/4")	1
2	9305-56-0	Fender Support Weldment	2
3	62-503	1/2NC x 1-1/2" Set Screw	2
4	63-106	1/2NC Hex Nut	2
5	44-220	Mud Flap	1
6	62-108	3/8NC x 1" GD.5 Cap Screw	4
7	9274-0-1	Mud Flap Backing Plate	1
8	63-134	3/8NC Self Locking Nut	4

SINGLE POLY FENDERS

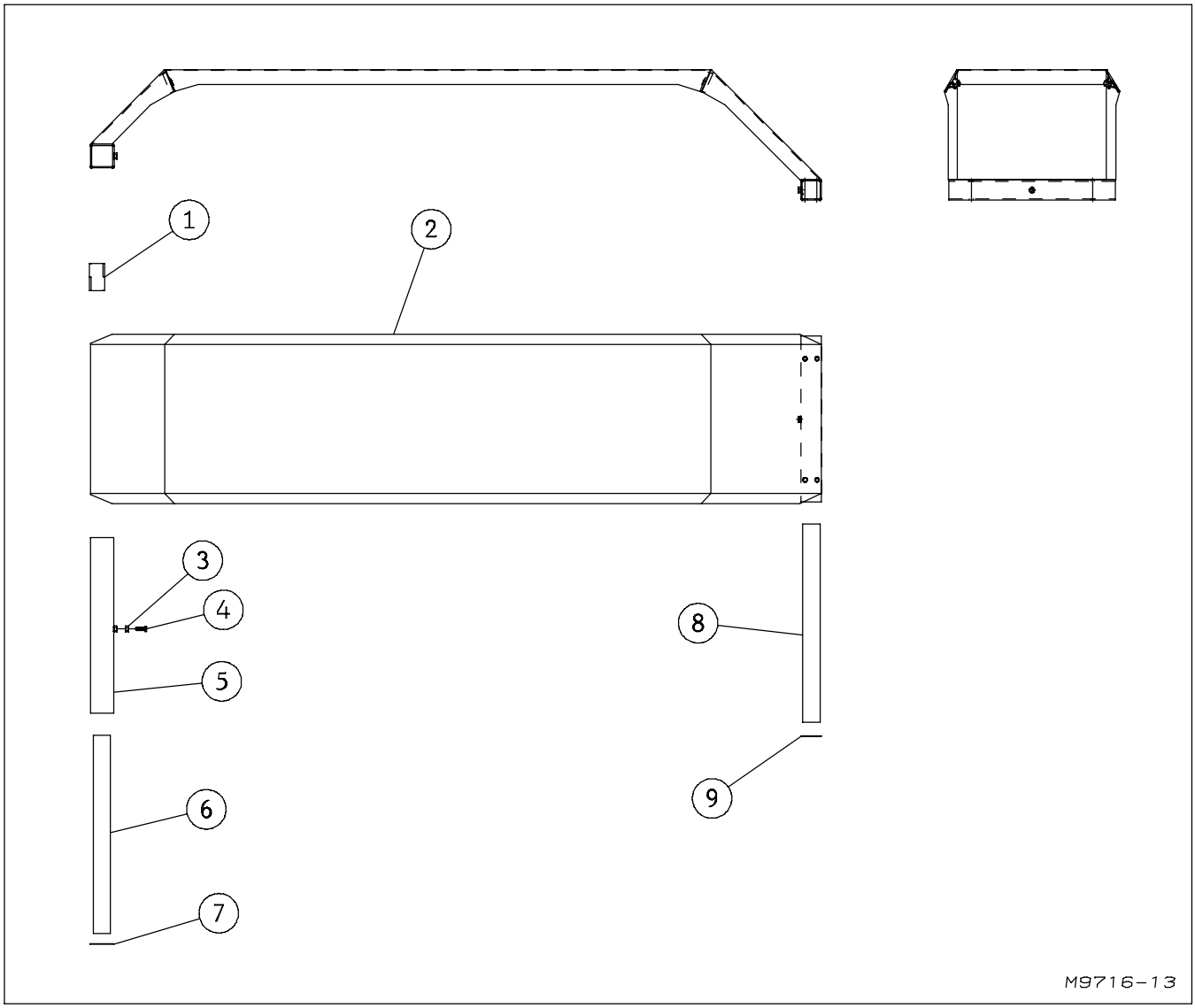


FOR MODELS - KP816 1/99

Item	*Part Number*	*Part Description*	*Qty.*
1	44-190	Poly Fender Kit Single Axle 26”	1
2	82-255	Mounting Kit for 44-190	1
3	★	5/16NC x 1” Hex Head Cap Screw	16
4	★	5/16” STD. Flat Washer	23
5	★	5/16NC Nylon-Top Lock Nut	23
6	★	5/16NC x 1-1/4 Carriage Bolt	7

★ Items Included in Mounting Kit

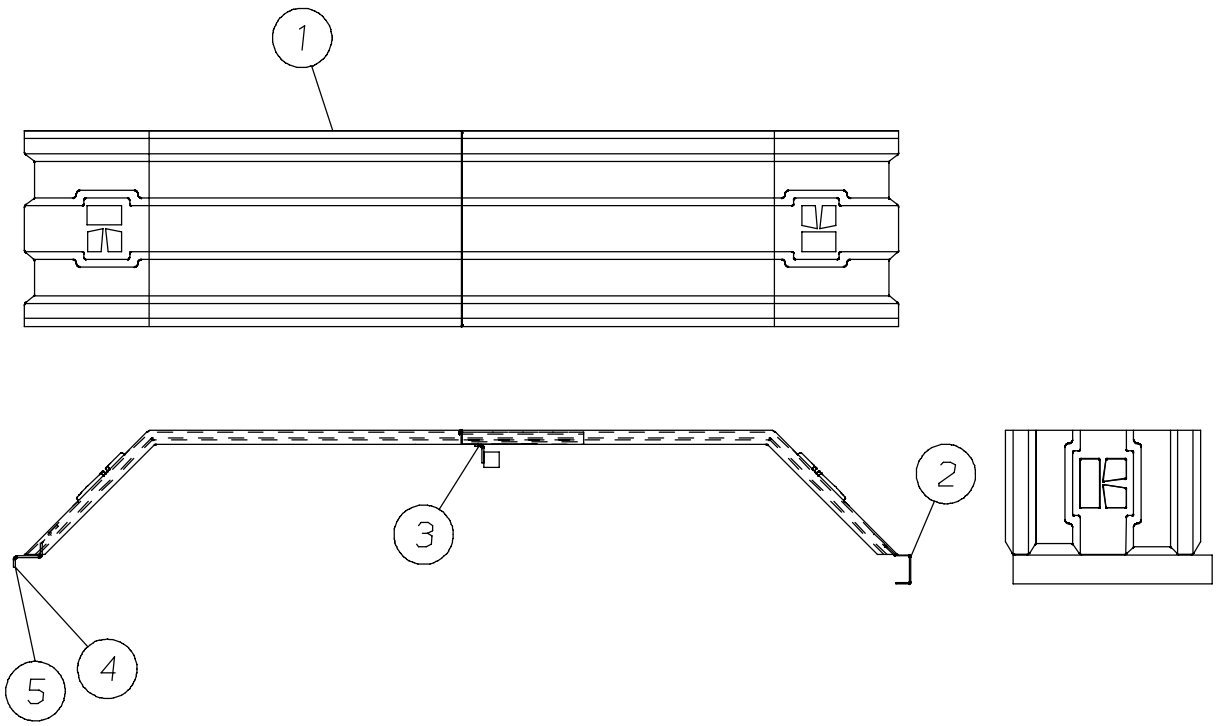
TANDEM STEEL FENDERS



FOR MODELS - KP816 2/02

Item	*Part Number*	*Part Description*	*Qty.*
1	9274-0-3501	Gusset	4
2	9274-159-0	Fender Weldment (102" Max)	2
3	63-106	1/2NC Hex Nut	4
4	62-503	1/2NC x 1-1/2" Square Head Cone Point Set Screw	4
5	9274-148-0	Front Fender Tube Weldment	2
6	9625-0-8	Front Fender Mounting Tube	2
7	9274-162-1	End Cap w/ Hole	2
8	9625-0-7	Rear Fender Mounting Tube	2
9	9274-50-6	End Cap	2

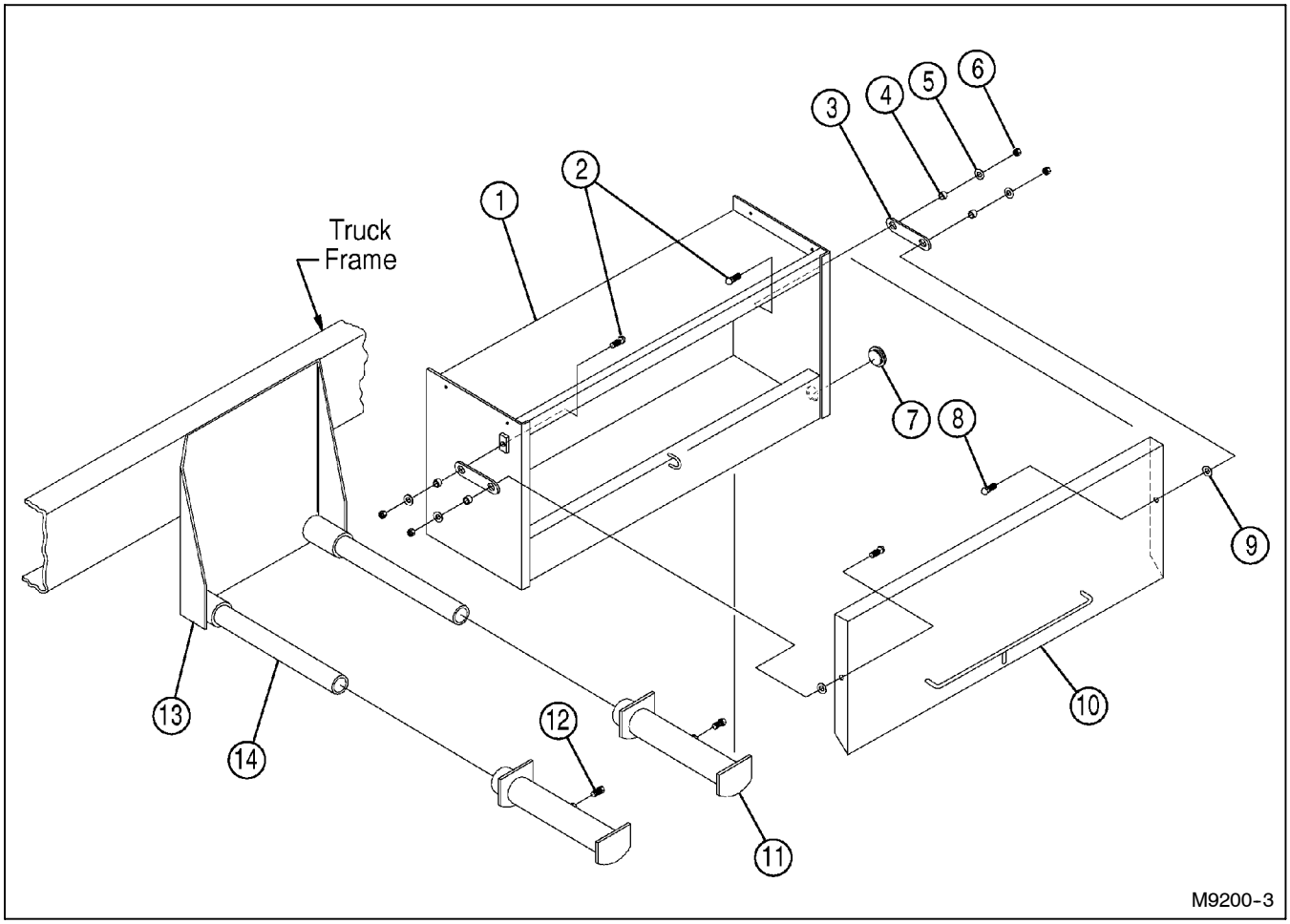
TANDEM POLY FENDERS



FOR MODELS - KP816 7/97

Item	*Part Number*	*Part Description*	*Qty.*
1	44-133	Dual Poly Fender	4
2	9274-115-1A	Rear Fender Mount	2
3	9274-115-8	Center Fender Mount	2
4	9274-115-5	Front Fender Brace - Left	1
5	9274-115-6	Front Fender Brace - Right	1

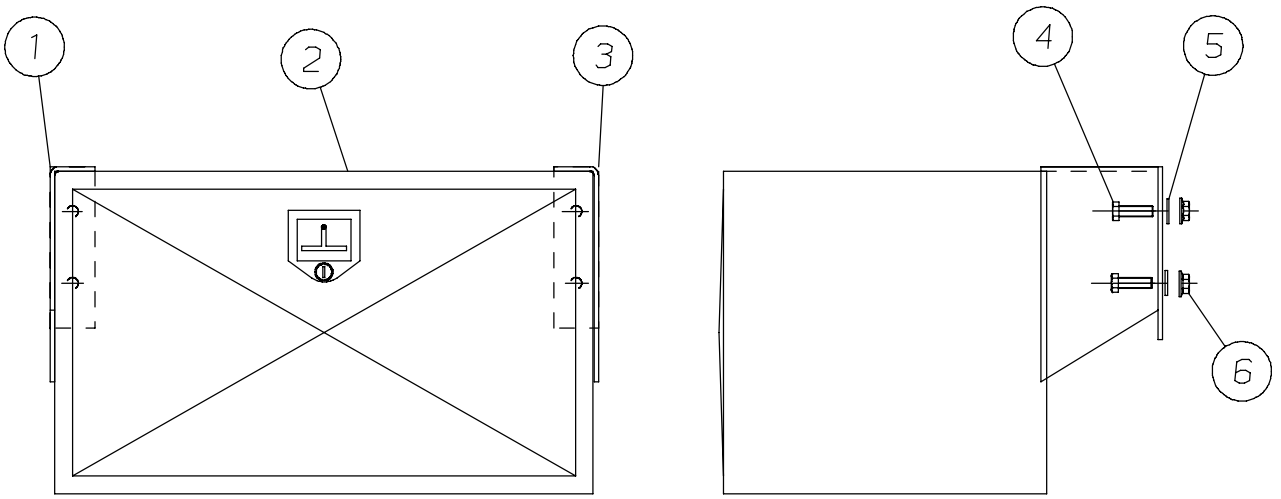
TOOL BOX



FOR MODELS - ALL 1/07

Item	*Part Number*	*Part Description*	*Qty.*
	9274-110-0	Tool Box & Platform Assembly	1
1	9274-36-0	Tool Box Weldment	1
2	62-139	1/2NC x 1-3/4" Carriage Bolt	2
3	9274-35-1	Hinge Strap	2
4	53-126	Wear Sleeve	4
5	64-108	1/2" STD. Flat Washer	4
6	63-107	1/2NC Self Locking Nut	4
7	75-109	Plastic Plug	1
8	62-598	1/2NC x 1-1/2"GD5 Round Head Square Neck Bolt	2
9	64-110	5/8" STD. Flat Washer	2
10	9274-37-0	Tool Box Lid Weldment	1
11	9274-48-0	Tool Box Rack	2
12	62-300	1/2NC x 1" GD5 Cap Screw	2
13	9244-59-0	Tank Mounting Weldment	2
14	9274-45-1	Pipe	2

TOOL BOX

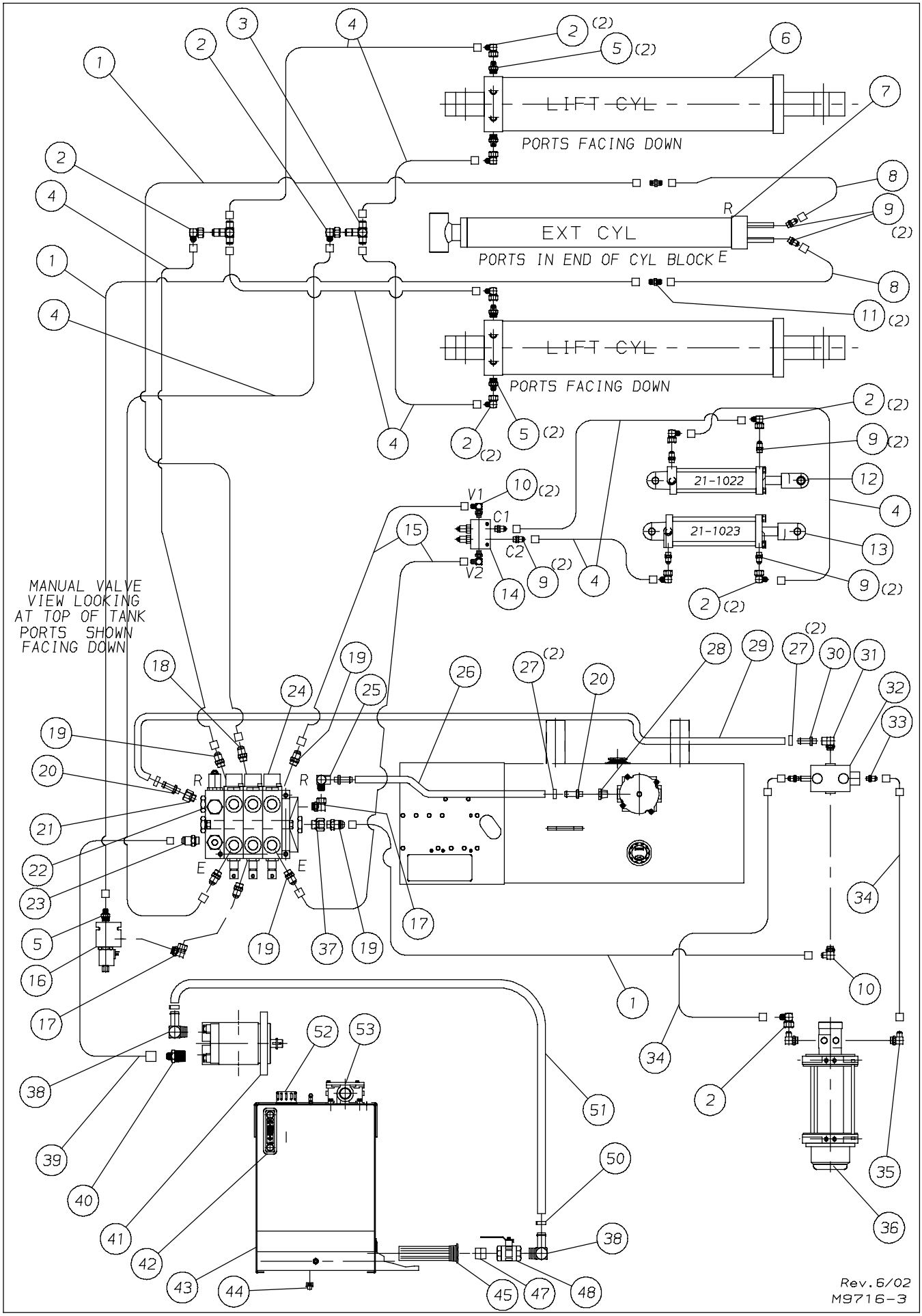


NOTE STEEL TOOLBOX MOUNTS ARE WELDED
TO TOOLBOX AND BOLTED TO FRAME

M9606-4
3/97

FOR MODELS - KP816 6/97

Item	*Part Number*	*Part Description*	*Qty.*
1	9606-111-0	Left Tank Strap Weldment	1
2	82-245	Steel Tool Box	1
3	9606-112-0	Right Tank Strap Weldment	1
4	62-708	5/8NC x 2-1/2" GD.8 Cap Screw	4
5	63-110	5/8NC Lock Nut	4
6	64-110	5/8" STD. Flat Washer	4


LIFT CYL
PORTS FACING DOWN
EXT CYL
PORTS IN END OF CYL BLOCK
LIFT CYL
PORTS FACING DOWN
21-1022
21-1023
MANUAL VALVE
VIEW LOOKING
AT TOP OF TANK
PORTS SHOWN
FACING DOWN
Rev.6/02
M9716-3

HYDRAULICS (KP816)

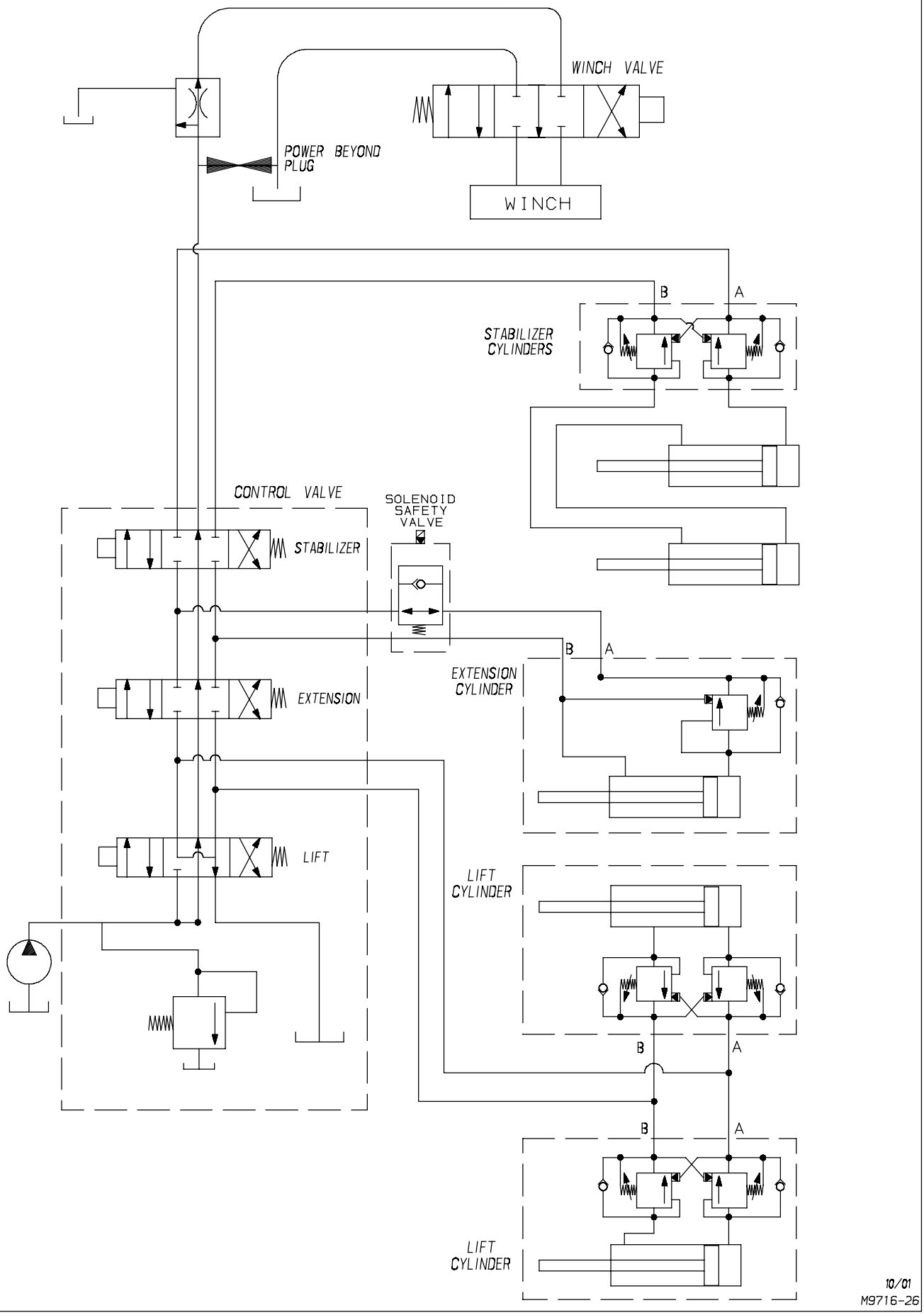
1/07

Item	Part Number	Part Description	Qty.
1	24-363R	1/2" x 284" (JIC) Black 2W Hose Assembly	2/1●
2	25-310	3/4(M)JIC to 3/4(F)JIC Swivel Hydraulic Fitting	10/1●
3	25-326	37 (M) Bulkhead Tee Hydraulic Fitting	2
4	24-387R	1/2 x 56" (JIC) Black 2W Hose Assembly	6/3★
5	25-363	1-1/16 O-Ring to 3/4JIC (M/M) Hydraulic Fitting	5
6	23-707	6" x 55-1/2" Hydraulic Cylinder	2
7	23-722	3" x 48" Hydraulic Cylinder	1
	23-721	3" x 35" Hydraulic Cylinder	1
8	24-3036	1/2" x 30" JIC w/ SL Hose Assembly	2
9	25-300	3/4(M) O-Ring to 3/4(M) JIC Adapter Hydraulic Fitting	2/6★
10	25-301	O-Ring 37° Flare 90° Ell Hydraulic Fitting	★2/1●
11	25-304	37° Flare Male coupler Hydraulic Fitting	2
12	★ 21-1022	3-1/2" x 10" Ret/Series Hydraulic Cylinder	1
13	★ 21-1023	3-3/4" x 10" Ret/Series Hydraulic Cylinder	1
14	★ 25-2496	Dual Counterbalance Valve	1
15	★ 24-373R	1/2" x 190" (JIC) Hydraulic Hose Assembly	2
16	79-563	Solenoid Valve - N.C. (40 GPM)	1
17	25-583	1-1/16 O-Ring to 1-1/16JIC 90° Hydraulic Fitting	2
18	25-478	7/8(M) O-Ring to 1-1/16(M) Straight Hydraulic Fitting	1
19	25-379	7/8(M) O-Ring to 3/4(M) JIC Adapter Hydraulic Fitting	★2/1●
20	25-1175	3/4NPT(M) to 3/4 Hose Straight Hydraulic Fitting	2/1●
21	● 25-448	1-1/16(M) O-Ring to 3/4NPT(F) Hydraulic Fitting	1
22	25-2495	2 Spool Control Valve (Reversed w/ Free Flow Spool)	1
23	25-342	1-1/16 O-Ring to 1-1/16 JIC Hydraulic Fitting	1
24	25-2502	4-Way 3-Position (Rev V20) Valve Section	1
25	25-449	1-1/16(M) to 3/4NPT(F) 90 Hydraulic Fitting	1
26	24-1151	3/4 x 20" Low Pressure Hose	1
27	25-494	Hose Clamp (1-3/16" to 1-3/8")	2/2●
28	25-1182	1-1/2NPT(M) to 3/4NPT(F) Hex Reducer Fitting	1
29	● 24-1150	3/4" x 276" Low Pressure Hose	1
30	● 25-1180	1/2NPT(M) to 3/4 Hose End Hydraulic Fitting	1
31	● 25-493	3/4(M)O-Ring to 1/2NPT(F) 90° Hydraulic Fitting	1
32	● 25-2394	Valve, SD4-1 (SV) - 2BLSD-SAE	1
33	● 25-328	9/16(M) O-Ring to 3/4(M) JIC Hydraulic Fitting	2
34	● 24-3042	1/2 x 80 (JIC) 90° 3000 PSI Hose Assembly	2
35	● 25-485	3/4(M) JIC to 7/8(M) O-Ring 90° Hydraulic Fitting	2
36	● SEE PG P7	Winch	
37	● 25-2419	Power Beyond Sleeve SAE #10 (V20 Valve)	1
38	25-170	1-1/4NPT to 1/1/4 Hose 90° Hydraulic Fitting	2
39	24-609	3/4" x 96" (JIC) w/MTL Mega 3000 Hose Assembly	1
40	25-531	1-1/16(M) JIC to 1-1/4NPT (M) Hydraulic Fitting	1
41	25-2402	31 GPM Pump (615)	1
42	25-235	Sight Gauge w/Temp 5"	1
43	9244-30-0A	Hydraulic Tank Weldment	1
44	25-2374	3/4NPT Magnetic Plug	1
45	25-233	Oil Strainer - 25 GPM	1
46			
47	75-141	1-1/4NPT Close Nipple Hydraulic Fitting	1
48	25-2387	1-1/4NPT(F) x 1-1/4NPT Ball Valve	1
49			
50	25-487	(T-Bolt Type) Hose Clamp	2
51	24-1136	1-1/4ID x 96" 100R4 Hose Assembly	1
52	25-215	Filler Cap Assembly	1
53	25-2247	In-Tank Filter	1
	25-2248	Filter Element	1

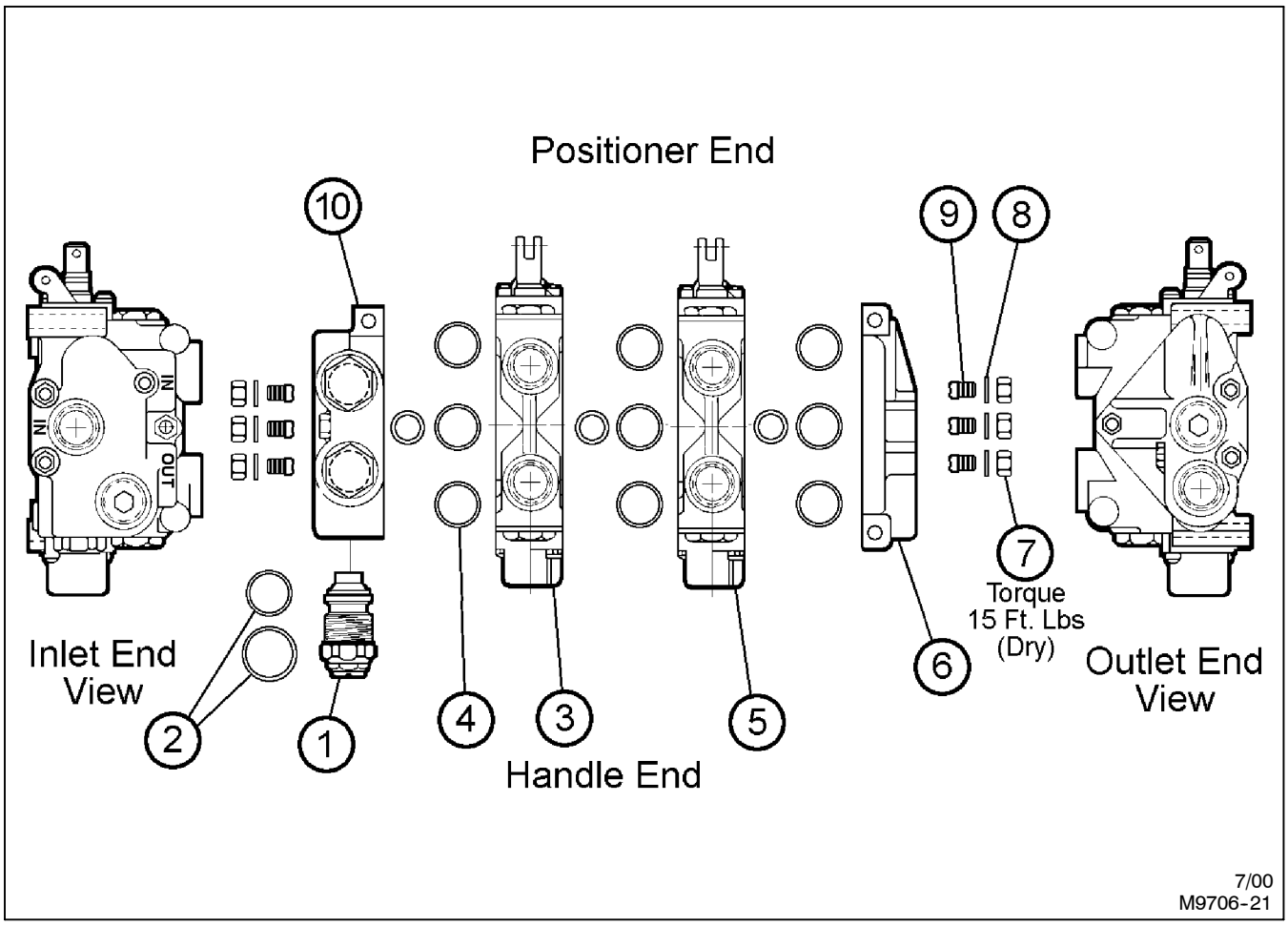
● Winch

★ Stabilizer

HYDRAULIC SCHEMATIC

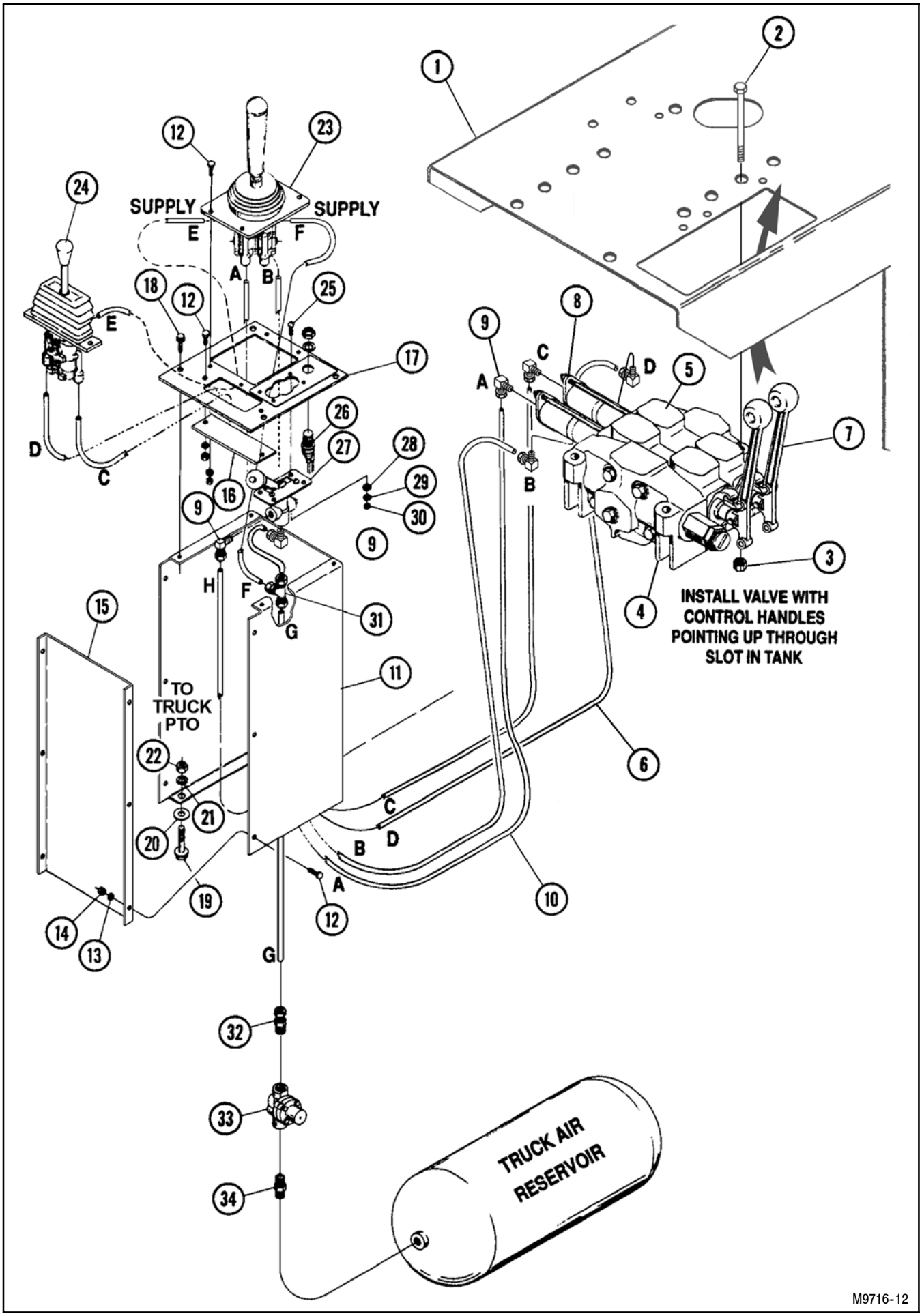


GRESEN VALVE ASSEMBLY



FOR MODELS - ALL 11/00

Item	*Part Number*	*Part Description*	*Qty.*
	25-2495	Gresen V20 2 Spool Valve Assembly (Reversed)	1
1	25-2409	Main Relief Valve	1
2	25-2413	Relief Valve Seal Kit (WH Std. Relief)	1
3	25-2508	Valve Section - 4 Way, 3 Position, Free Flow Spool (Reversed)	1
4	25-2408	Valve Section Seal Kit	1 / Section
5	25-2502	Valve Section - 4 Way, 3 Position Spool (Reversed)	1
6	25-2412	Outlet Cover	1
7		Hex Nut	6
8		Lock Washer	6
9		Studs	3
10	25-2411	Inlet Cover	1


SUPPLY
SUPPLY
TO TRUCK PTO
INSTALL VALVE WITH CONTROL HANDLES POINTING UP THROUGH SLOT IN TANK
TRUCK AIR RESERVOIR
M9716-12

KP816 AIR CONTROL 2 OR 3 SPOOL PARTS

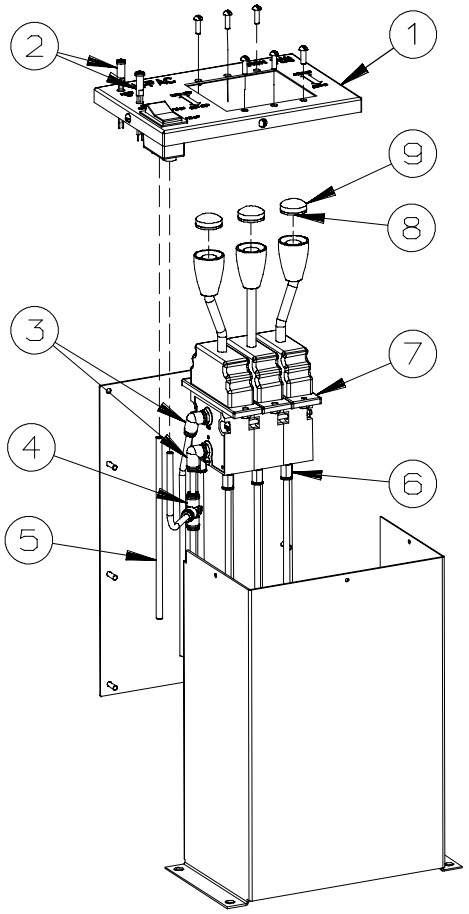
FOR MODELS - KP816 10/01

Item	Part Number	Part Description	Qty.
1		Hydraulic Tank - 30 Gallon	1
2	62-394	5/16NC x 2-1/2" Cap Screw	3
3	63-167	5/16NC Nylon-Top Lock Nut	3
4	25-2495	Control Valve 2 Spool (Rev. w/ Free Flow Spool) V20	1
5	★ 25-2406	Valve Section, 4-Way, 3-Position Spool	1
6	★● 82-124	Air Line	40'
7	9610-45-0	Handle Kit, V-20 Valve	2/3
8	82-288	Air Activator Assembly	2/3
9	82-126	Compression Fitting 1/8NPT(M) - 1/4" Tube 90°	5
10	● 82-124	Air Line	80'
	9274-196-0	Air Control Tower Assembly	1
11	9274-196-2	Tower	1
12	62-530	1/4NC x 1/2" Cap Screw	14
13	64-100	1/4" STD. Lock Washer	14
14	63-100	1/4NC Hex Nut	14
15	9274-196-3	Cover	1
16	9274-196-4	Cap (Used when not equipped with Item 24)	1
17	9274-196-1	Air Control Mounting Plate	1
18	62-342	1/4NC x 3/4" Hex Washer Thread Cutting Screw	4
19	62-115	3/8NC x 1-1/2" Hex Washer Thread Cutting Screw	4
20	64-104	3/8" STD. Flat Washer	4
21	64-103	3/8" STD. Lock Washer	4
22	63-102	3/8NC Hex Nut	4
23	82-157	Joystick Controller	1
24	★ 82-199	Pneumatic Control Valve (1 valve)	1
25	62-485	#10NC x 1/2" Cross Recess Pan Head Machine Screw	4
26		P.T.O. Indicator Light	1
27		Air Valve	1
28	64-158	#10 Flat Washer	4
29	64-170	#10 External Tooth Lock Washer	4
30	63-151	#10 Hex Nut	4
31	82-166	1/4" Tube Union Tee Compression Fitting	1
32	82-163	3/8NPT Male 1/4" Tube Straight Compression Fitting	1
33	82-168	Pressure Protection Valve	1
34	82-167	1/4NPT Hex Nipple	1

★ Used with 3-Spool Valve Assembly ONLY

● This is a bulk quantity item. Specify the amount required when ordering.

AIR CONTROLLER ASSEMBLY



82-344 KIT INCLUDES CONTROLLER WITH STRAIGHT HANDLE, CLEAR CAP, 2 SWIVEL CONNECTORS, 2 O-RINGS, AND LONGER SCREWS TO RETAIN SECTIONS

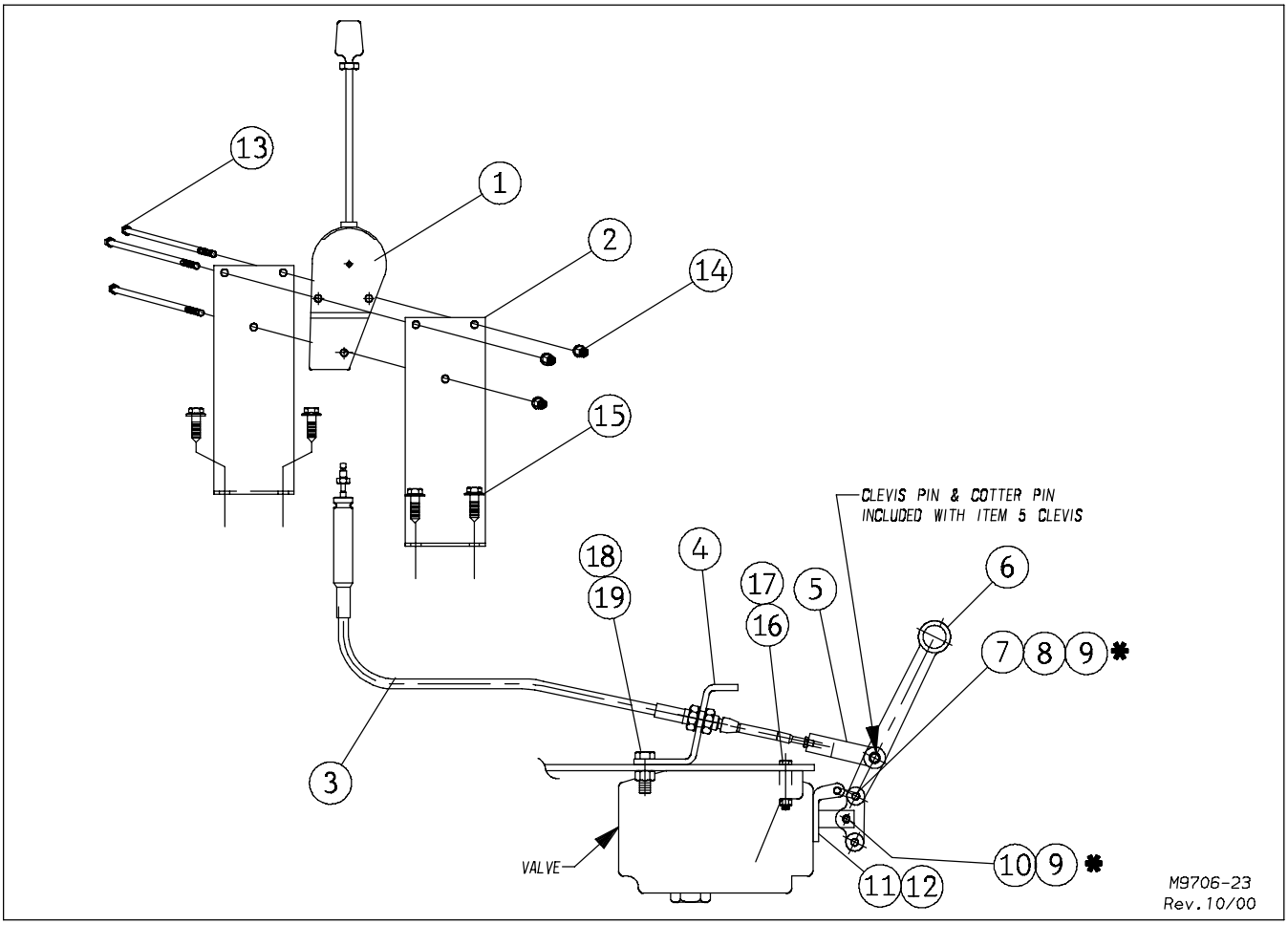
82-345 KIT INCLUDES ELECTRIC PTO SWITCH AND WIRING

FOR MODELS - ALL

1/07

Item	*Part Number*	*Part Description*	*Qty.*
1	82-341	Tower Cover (Stainless Steel)	1
2	79-579	LED Lamp (Includes retaining clip)	2
3	82-313	Elbow, Swivel	2
4	82-314	Tee, Swivel	1
5	82-124	Air Line 1/4od SAE J844 Type “A”	Spec.
6	82-346	Connector, Swivel	4/6★
7	82-332	Pneumatic Controller, 2-Section	1
	82-333	Pneumatic Controller, 3-Section	1
8	74-636	Decals, Controls	1
9	82-343	Clear Cap	2/3★
	82-339	O-Ring (between sections)	2/4★
	82-344	Conversion Kit from 2 To 3 Sections	
	82-345	Conversion Kit To Electric PTO Switch	
Doubled Quantities Reflect 2-Sections / 3 Sections★			

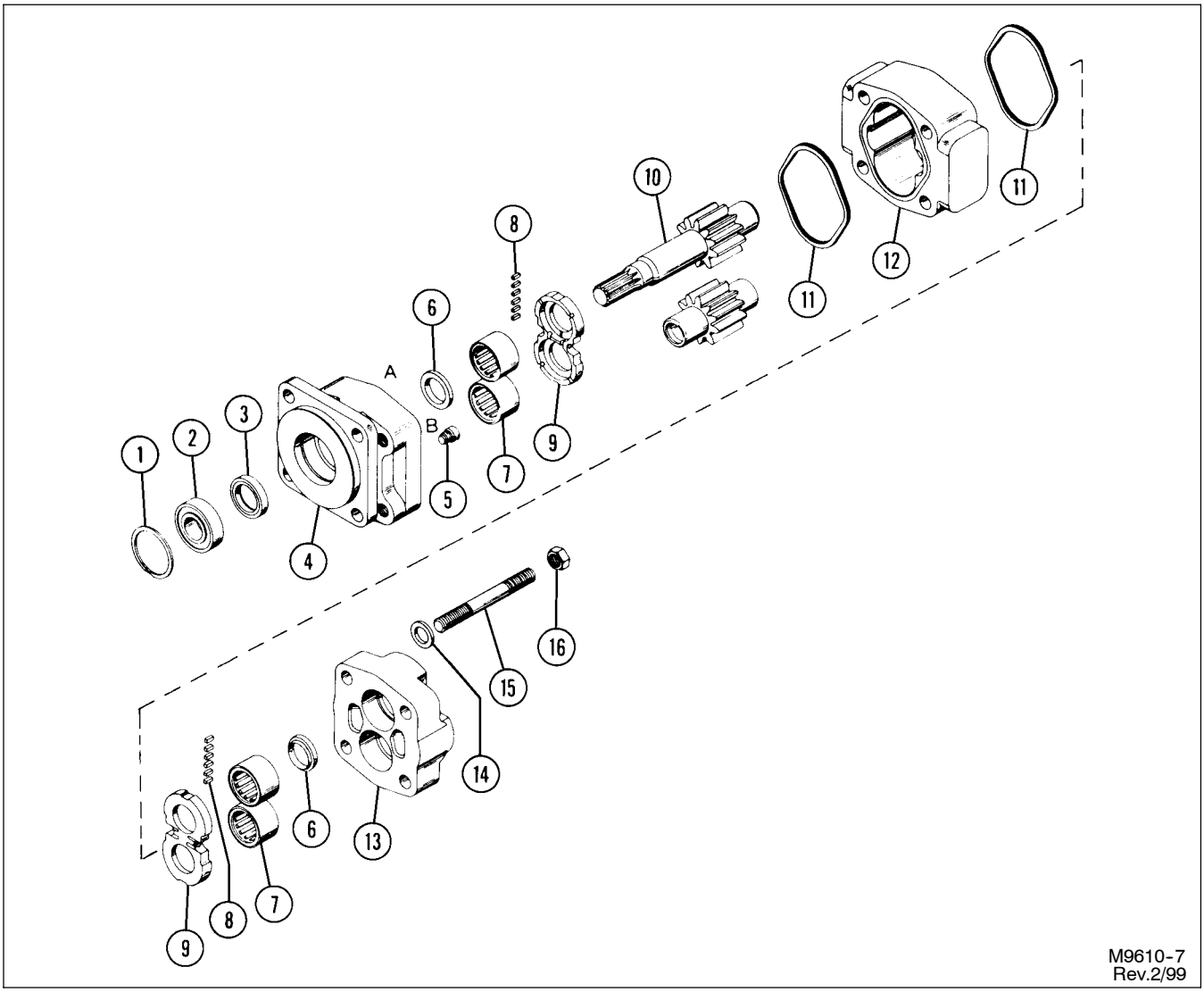
REMOTE VALVE & CONTROLS



FOR MODELS - KP816 1/07

Item	*Part Number*	*Part Description*	*Qty.*
1	82-238	Controller	2
2	9274-0-1305	Control Mount	2
3	72-132	Cable - 108" Long	2
	72-131	Cable - 156" Long	2
	72-109	Cable - 252" Long	2
4	9610-0-17	Control Cable Bulkhead Plate	1
	9706-0-23	3 Cable Bracket	1
5	72-108	Clevis, 3/8" Hole	2
6	9610-108-1	Valve Handle	2
	25-2505	V-20 Valve Linkage Kit	
7	★	Link	1
8	★	Link Plate	1
9	★	Cotter Pin	3
10	★	Pin	1
11	25-2199	Die Cast Bracket	1
12	25-2201	Screw	2
13	62-106	1/4NC x 4" GD5 Cap Screw	3
14	63-141	1/4NC Hex Flange Serrated Nut	3
15	62-115	3/8NC x 1-1/2" Hex Washer Thread Cutting Screw	4
16	62-394	5/16NC x 2-1/2" GD5 Cap Screw	3
17	63-114	5/16NC Lock Nut	3
18	62-420	1/2NC x 1-1/4" GD5 Cap Screw	2
19	63-107	1/2NC Lock Nut	2
★	Items included in V20 Valve Linkage Kit		

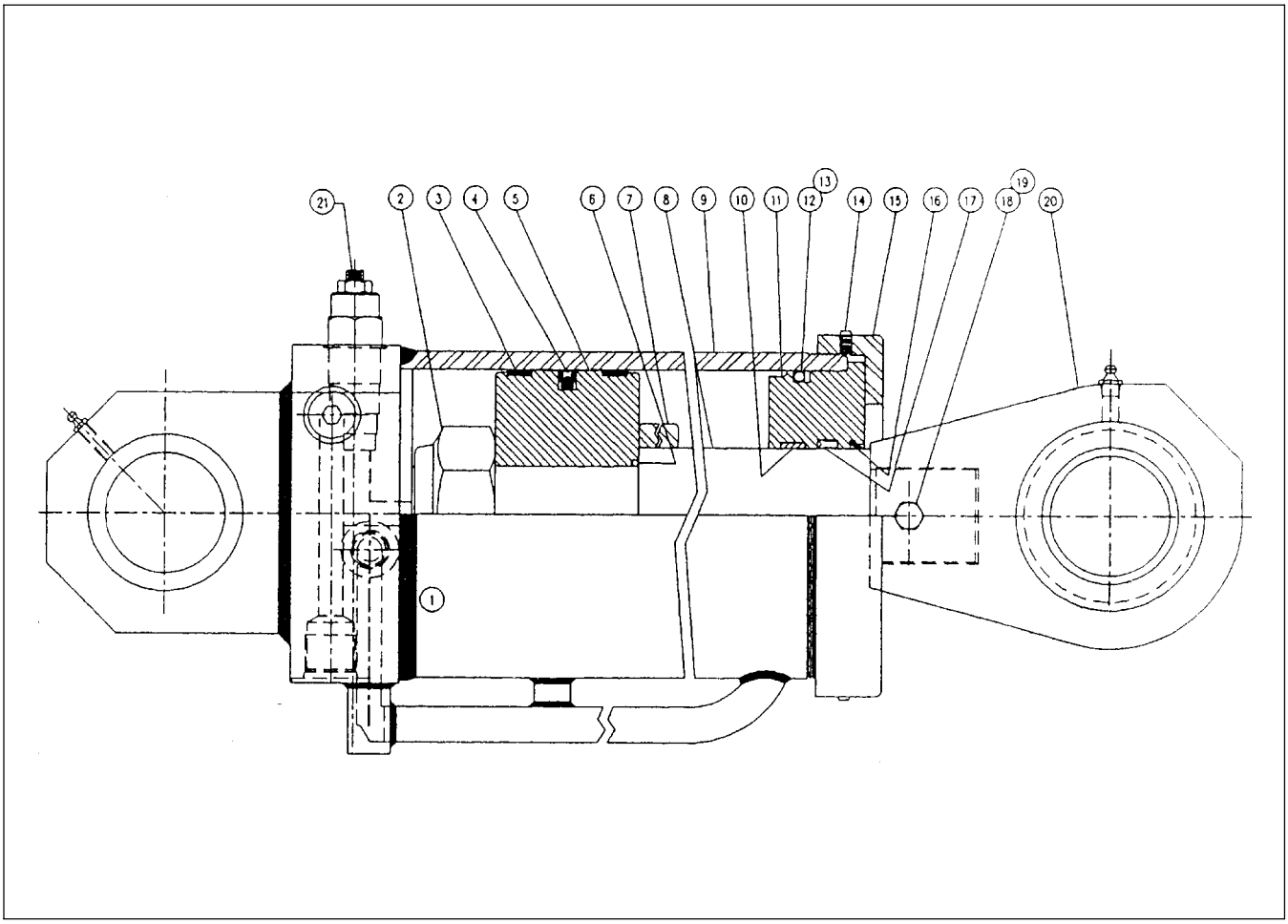
DIRECT MOUNT HYDRAULIC PUMP



FOR MODELS - 2/01

Item	*Part Number*	*Part Description*	*Qty.*
	25-2402	Gear Pump	1
1		Snap Ring	
2		Outboard Bearing	
3		Seal	
4		Shaft End Cover	
5		Check Assemblies or Plug	
6		Ring Seals	
7		Roller Bearings	
8		Pocket Seals	
9		Thrust Plates	
10		Integral Drive Shaft and Gear Set	
11		Gasket Seals	
12		Gear Housing	
13		Port End Cover	
14		Washer	
15		Stud or Cap Screw	
16		Nut	

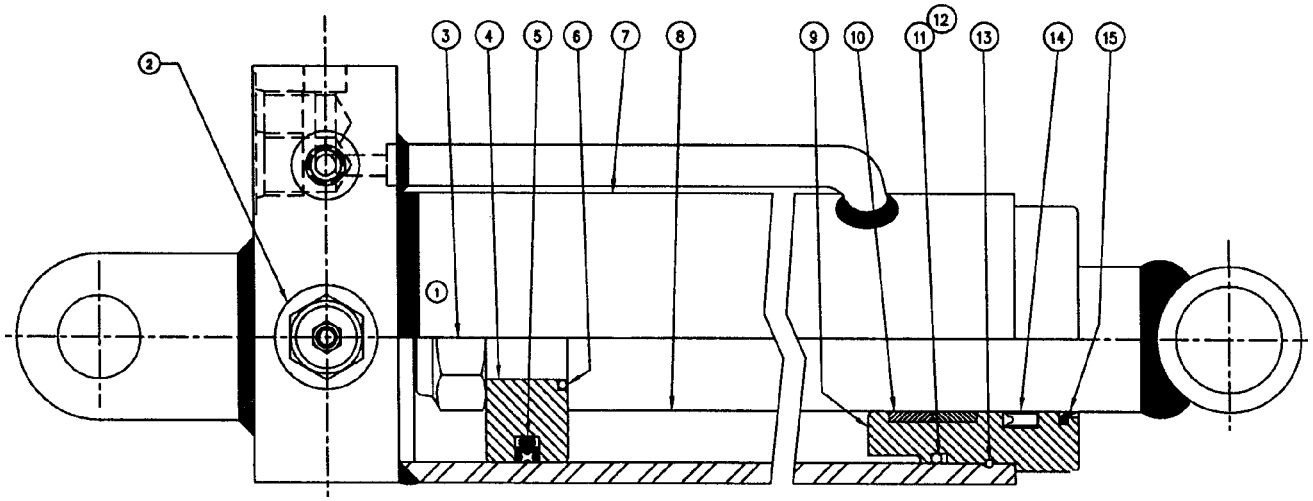
HYDRAULIC CYLINDER ASSEMBLY



23-707 6" x 55-1/2" Hydraulic Cylinder Assembly (LIFT) 4/00
Retracted - 74-5/8" Extended - 130-1/8" Stroke - 55-1/2" Rod Dia. - 2-3/4"

Item	*Part Number*	*Part Description*	*Qty.*
1		Manufacturer's Label	1
2		Full Locknut	1
3	★	Wear Ring	2
4	★	Piston Seal	1
5		Piston	1
6	★	O-Ring	1
7		Stop Tube	1
8		Rod	1
9		Barrel Assembly	1
10	★	Wear Ring	1
11		Gland	1
12	★	O-Ring	1
13	★	Backup Washer	1
14		Set Screw	2
15		Cap	1
16	★	Rod Wiper	1
17	★	Rod Seal	1
18		3/8" Bolt	1
19		Nylon Lock Nut	1
20		Rod End Assembly	1
21	25-2432	Counterbalance Valve	2
22		3/4" Port Plug	3
	● 23-808	Seal Kit (★ Items Included in Kit)	
● Not Included in Cylinder Assembly			

GREEN HYDRAULIC CYLINDER ASSEMBLY

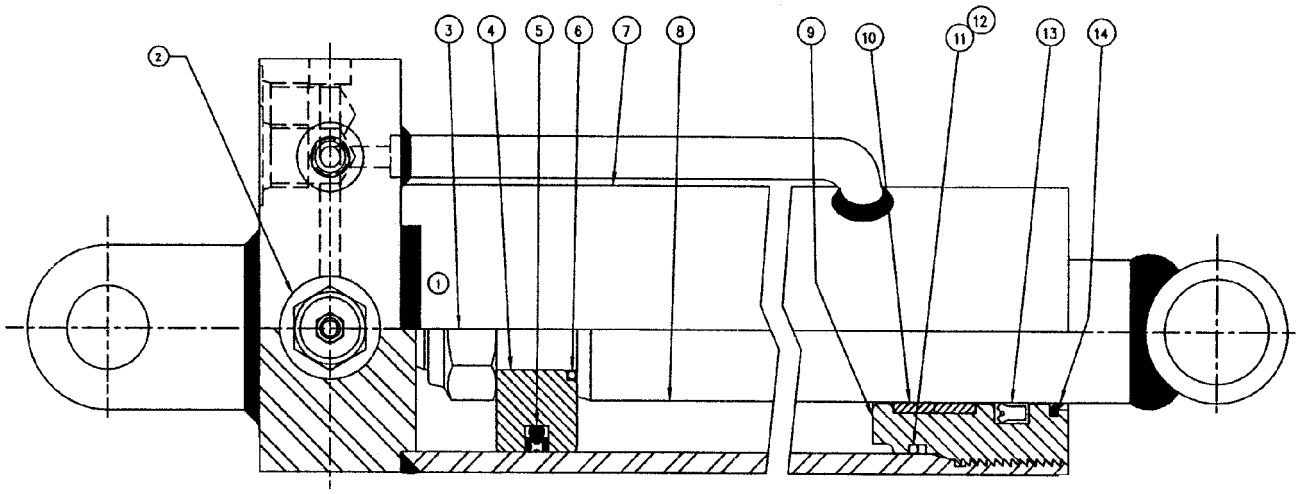


Rev.9/01

23-721 3" x 35" Green Hydraulic Cylinder Assembly (EXTEND) 9/01
Retracted - 45" Extended - 80" Stroke - 35" Rod Dia. - 1-3/4"

Item	*Part Number*	*Part Description*	*Qty.*
1		Manufacturer's Label	1
2	25-2433	Counterbalance Valve	2
3		Full Locknut	1
4		Piston	1
5	★	Piston Seal	1
6	★	O-Ring	1
7		Barrel Assembly	1
8		Rod Assembly	1
9		Head	1
10	★	Wear Ring	1
11	★	O-Ring	1
12	★	Back-up Washer	1
13		Lock Wire	1
14	★	Rod Seal	1
15	★	Rod Wiper	1
16		Steel Plug (not shown)	1
	● 23-803	Seal Kit (★ Items Included in Kit)	
● Not Included in Cylinder Assembly			

HYDRAULIC CYLINDER ASSEMBLY (156 CA)

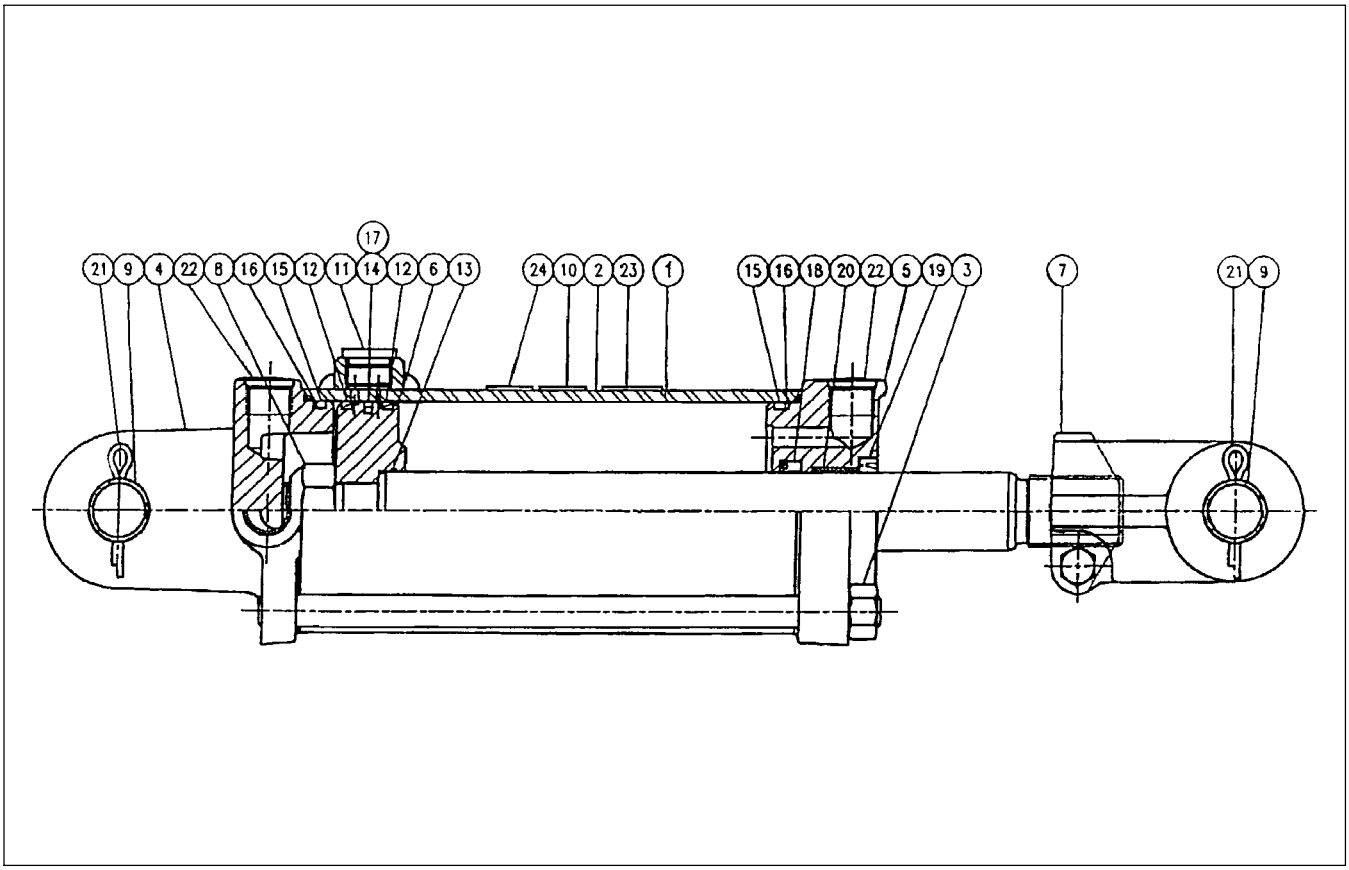


Rev.9/01

23-722 3" x 48" Hydraulic Cylinder Assembly (BOOM EXTEND) 9/01
Retracted - 58" Extended - 106" Stroke - 48" Rod Dia. - 1-3/4"

Item	*Part Number*	*Part Description*	*Qty.*
1		Manufacturer's Label	1
2	25-2433	Counterbalance Valve	2
3		Full Locknut	1
4		Piston	1
5	★	Piston Seal	1
6	★	O-Ring	1
7		Barrel Assembly	1
8		Rod Assembly	1
9		Head	1
10	★	Wear Ring	2
11	★	O-Ring	1
12	★	Back-up Washer	1
13	★	Rod Seal	1
14	★	Rod Wiper	1
15		Steel Plug (not shown)	1
	● 23-803	Seal Kit (★ Items Included in Kit)	
● Not Included in Cylinder Assembly			

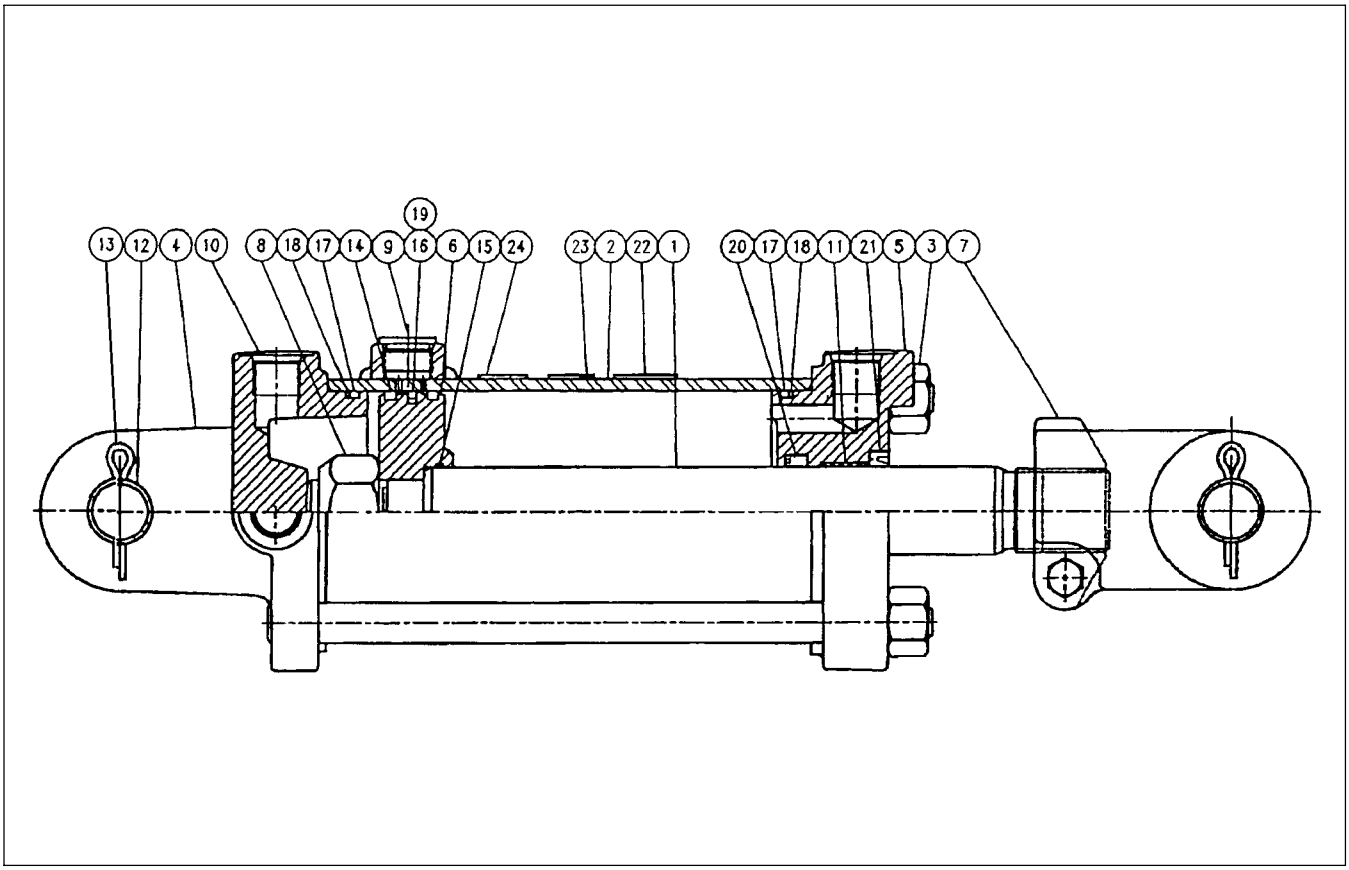
PRINCE HYDRAULIC CYLINDER



21-1022 3-1/2" X 10" PRINCE HYDRAULIC CYLINDER ASSEMBLY (Series) 12/00
Retracted - 22-1/4" Extended - 32-1/4" Stroke - 10" Rod Diameter - 1-1/4"

Item	*Part Number*	*Part Description*	*Qty.*
1		Piston Rod	1
2		Tube Assembly	1
3		Tie Rod Assembly	4
4		Butt	1
5		Gland Assembly	1
6		Piston	1
7	21-2131	Clevis Assembly	1
8		Lock Nut	1
9	21-376	Clevis Pin	2
10	21-2121	Seal Kit Decal	1
11		Port Plug	1
12	★	Bearing Ring	2
13	★	O-Ring	1
14	★	O-Ring	1
15	★	O-Ring	2
16	★	Back-Up Washer	2
17	★	Teflon Seal	1
18	★	U-Cup	1
19	★	Wiper	1
20		Bushing	1
21	60-703	3/16" DIA. x 1-3/4" Cotter Pin	4
22	21-404	Port Plug	3
23	21-443	Series Caution Decal	1
24	74-113	Cylinder WARNING Decal	1
	21-2088	Seal Kit (★ Items Included in Kit)	

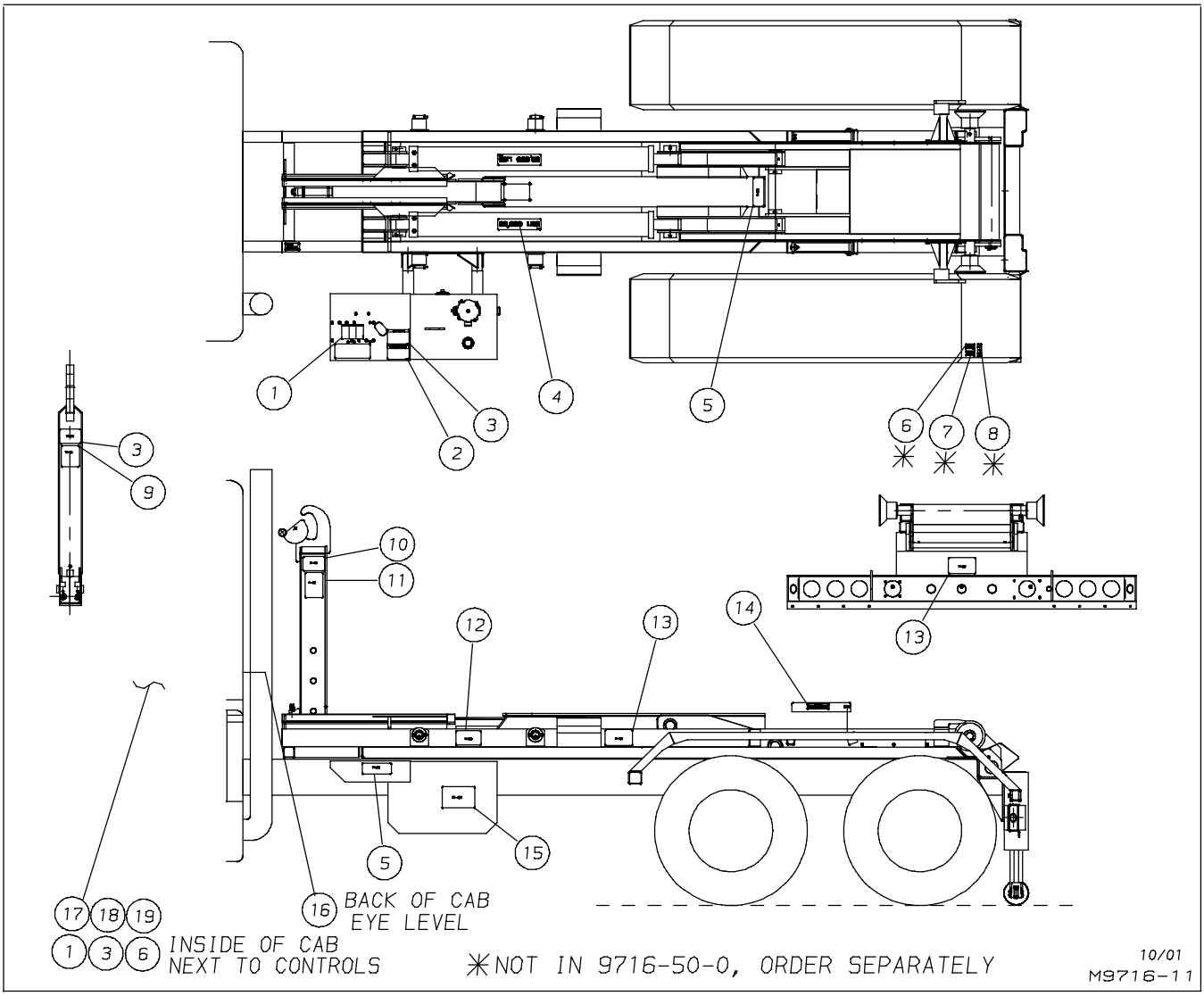
PRINCE HYDRAULIC CYLINDER



21-1023 3-3/4" X 10" PRINCE HYDRAULIC CYLINDER ASSEMBLY (Series) 12/00
Retracted - 22-1/4" Extended - 32-1/4" Stroke - 10" Rod Diameter - 1-3/8"

Item	*Part Number*	*Part Description*	*Qty.*
1		Piston Rod	1
2		Tube Assembly	1
3		Tie Rod Assembly	4
4		Butt	1
5		Gland	1
6		Piston	1
7	21-2126	Clevis Assembly	1
8		Lock Nut	1
9		Port Plug	1
10		Port Plug	3
11		Bushing	1
12	21-260	Clevis Pin	2
13	60-703	3/16" DIA. x 1-3/4" Cotter Pin	4
14	★	Bearing Ring	2
15	★	O-Ring	1
16	★	O-Ring	1
17	★	O-Ring	2
18	★	Back-Up Washer	2
19	★	Teflon Seal	1
20	★	U-Cup	1
21	★	Wiper	1
22	21-443	Series Caution Decal	1
23	21-2117	Seal Kit Decal	1
24	74-113	Cylinder Warning Decal	1
	● 21-808	Seal Kit (★ Items Included in Kit)	

DECALS



FOR MODEL - KP816 7/04

Item	Part Number	Part Description	Qty.
1	74-598	Decal - Important Valve Operation	2
2	74-596	Decal - Danger Operating Outside Controls	1
3	74-593	Decal - Danger Lock Must Be Engaged	3
4	74-579	Decal - 32,000 Lbs.	2
5	74-276	Decal - Warning Hydraulic Safety	2
6	74-481	Decal - Caution Do Not Drive PTO	2
7	74-476	Decal - Caution Set Brake	1
8	74-286	Decal - Winch	1
9	74-485	Decal - Danger Power Lines (Hooklift)	1
10	74-490	Decal - Danger Hook Height Match	1
11	74-606	Decal - Trademark	2
12	74-288	Decal - Warning Raised Hoist	2
13	74-302	Decal - Danger Unit Operation	3
14	74-387	Decal - Cylinder Lock	2
15	74-266	Decal - K-PAC	1
16	74-477	Decal - Caution Safety Instructions	1
17	74-297	Decal - Warning Uneven Ground	1
18	74-478	Decal - Important Operation Instruction	1
19	74-486	Decal - Warning Align Container	1
20	★ 74-600	Reflective Tape - Red/White (NOT SHOWN)	20 Ft.
21	★ 74-601	Reflective Tape - White (NOT SHOWN)	4
★ Specify exact quantity needed. See page A13 for suggested locations on truck frame			

KP816 HOIST MOUNTING INSTRUCTIONS

STUDY NAMES AND LOCATIONS OF THE PARTS AND FAMILIARIZE YOURSELF WITH THE HOOK HOIST BEFORE STARTING THE INSTALLATION. READING THE STEP-BY-STEP INSTRUCTIONS THAT FOLLOW WILL BE HELPFUL.

SAFETY

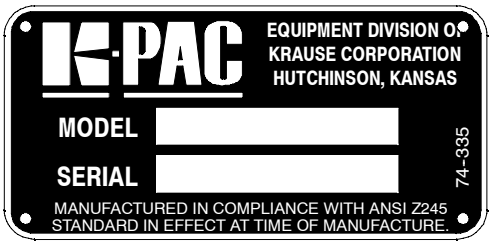
Read all of the Safety Notations in the following instructions for your own protection. Accidents can be prevented by recognizing the cause of an accident before it can happen.

INSTALLATION

Select an area for installation that will be large enough to accommodate the completed unit. The surface of the work area should be as level as possible. Use the proper hand tools to insure proper bolt tightness. Refer to the bolt chart on the previous page for the recommended torque values for different sizes of bolts.

If a forklift is to be used to lift the KP816 from the transport vehicle to the installation area, care should be taken not to engage chains or hooks to areas of the Hook Hoist which may cause damage to hydraulic hoses or any parts of the structure.

Before starting installation procedures, check the shipping list to ensure that all parts and accessories have been supplied. Any missing items should be reported to K-PAC immediately.

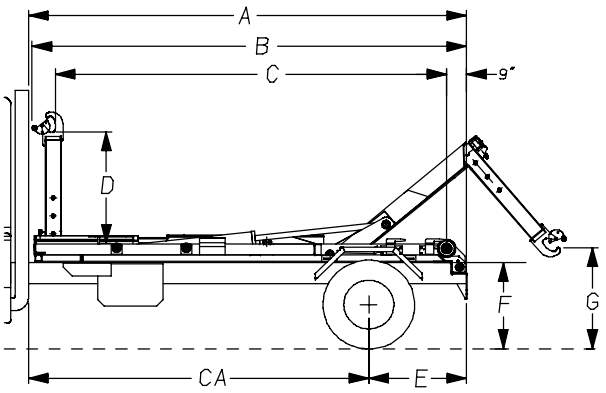


MODEL NUMBER

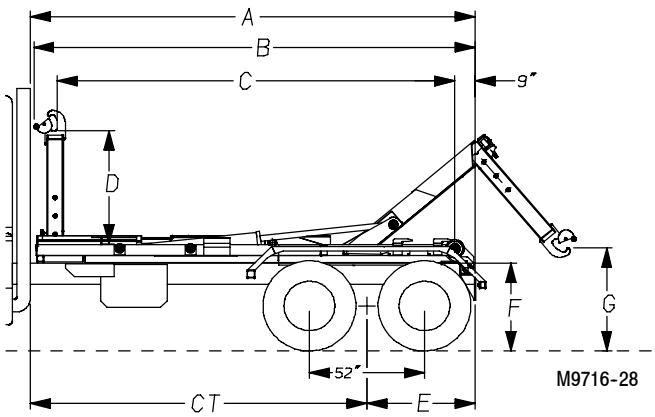
Know the model number of the KP816 being mounted. Use this model number whenever referring to assembly or parts listing pages. The number is stamped on a Name Plate which is located on the frame member.

CHASSIS SPECIFICATIONS

SINGLE AXLE TRUCK



TANDEM AXLE TRUCK



MODEL	A	B	C	D	E		F	G	
					SINGLE	TANDEM		54" boom	62" boom
KP816-138	183"	181.5"	161.50"	52.75"	45"	49"	41"	48"	42"
KP816-156	201"	199.5"	179.50"	60.50"	28"	49"	41"	48"	42"

The **KP816-138** / **KP816-156 Hook Hoist** is designed for a 30,000-46,000 lb. G.V.W.R. chassis with 138"/156" unobstructed behind cab-to-axle or trunnion chassis clearance. Some truck suspensions will allow frame cut-off less than 38". It is desirable to have the axle back as far as possible, so a longer cab-to-axle chassis can be used. If the suspension allows shorter than 21" then check fender clearance. This is based on a K-PAC single axle fender. Note: This information is supplied for guidelines only and does not assure the installer of other mounting considerations.

Dimension "A" is the minimum cab to frame cut-off dimension and should be increased if a tarper or toolbox, etc. is to be added. Also, be aware of exhausts, etc. behind the cab, measuring from the rearmost obstruction.

Truck Chassis cab-to-axle or cab-to-trunnion Specification formula:

Determine shortest "E" dimension possible with desired suspension. Also determine extra behind cab clearance for tarper, toolbox, or other accessories. Then use the following formula to determine CA or CT to specify: **Single Axle (CA) = A - E + extra clearance**

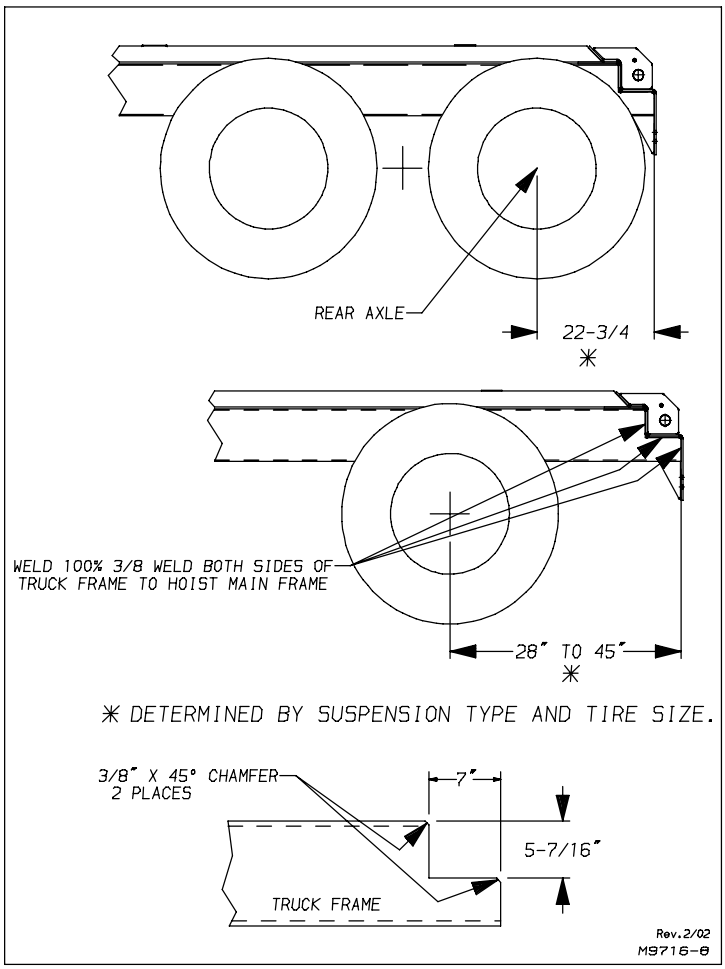
Tandem Axle (CT) = A - E + extra clearance

The preceding illustrations provide dimensional guidelines for compatibility with containers, etc. If the chassis is higher or lower than the 41" dimension shown, then the lowest hook pickup dimension will change accordingly.

HOOK HOIST MOUNTING INSTRUCTIONS

NOTE: RIGHT and LEFT sides can be established by standing behind the truck frame and looking towards the front or the direction of travel.

The KP816 Hook Hoist is designed to mount on a standard truck frame. If there are unmovable obstructions on top of the truck frame, you must add spacers to raise the hoist frame to clear, or move the obstructions.



1. Compare the Truck Chassis with the Hook Hoist ordered (138CA / 156CA Hoist). Compare the specification dimensions to determine how far forward on the chassis the Hoist can be mounted. It is best to mount as far forward as possible for optimum weight distribution. Suspension and fender to rear holdown are the main considerations. See truck chassis Cab-To-Axle or CA-to-Trunnion specifications formulas above.

2. If chassis is longer than the above CA's the chassis can be cut off shorter per difference. Cut end of frame per illustration shown at right. Measure and mark truck frame per axle location and type (i.e. single, tandem). Measure assembled hoist to be sure adequate room is available behind truck cab, between bumper and tires and between fender and tires. After double-checking your measurements, step-cut the frame to dimension. Grind the top of each cut to a 3/8" x 45 chamfer to clear radius on top of hoist main frame rear apron. Install hoist mainframe and weld to truck frame as shown. **The minimum would be 1" behind the rear spring shackle.**

   NOTE: If bolts, pipe, pipe fittings, hydraulic fittings, hoses, etc., are substituted for the hardware supplied with the hoist, the installer must use parts of equal quality and service strength.

   NOTE: It may be necessary to relocate air tanks, fuel tank, battery cases or any other accessories mounted in this area.

   ⚠ **Caution: Before cutting or drilling through the truck chassis, be sure that all hoses, wiring and lines are moved out of the path of the drill.**

3. Unpackage the KP816 Hook Hoist Main Frame and prepare to lift it onto the truck chassis.

4. With the Truck Chassis prepared as previously illustrated, safely attach chains and lift the hoist with a heavy duty fork lift or some other suitable lifting device. Move and position the sub-frame over the truck chassis.

5. Lower the sub-frame onto the chassis so that the back plate on the sub-frame aligns with the end of the truck frame. See illustration.
6. Attach (2) 9210-15-22 Front and (6) 9716-0-8 Rear Mounting Brackets as shown in illustration on page A4.
7. Using a 5/8" drill bit, drill holes into the chassis rails matching the Mounting Brackets on the sub-frame.
8. Insert the 5/8" bolts through the brackets and truck frame, install nuts. Tighten all nuts and bolts per bolt torque chart at beginning of this section, matching the bolt grade.

POWER TAKE-OFF INSTALLATION

Caution: The power take-off selection should be done with care. For diesel engines, the P.T.O. should be 85% to 100% of engine R.P.M. For gas engines, the P.T.O. should be 65% to 80% of engine R.P.M. The direct mounted pump requires a SAE B 2-bolt mounting flange and must accept a 7/8" 13 tooth splined shaft.

Warning: Do not attempt to install or service any power take-off with your truck engine running. Put the ignition keys in your pocket before getting under the truck.

Do not allow truck engine to be started while workmen are under the truck.

Block truck wheels with suitable chocks before working under the truck.

Warning: Be sure to block any raised body or mechanism before working on or under the equipment.

Installed power take-offs must never be shifted in or out of gear by any means except by the controls in the cab of the truck.

Stay clear of spinning driveshafts to avoid becoming entangled and injured.

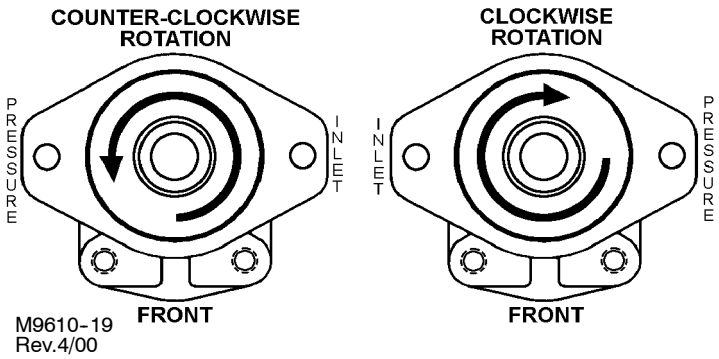
For P.T.O. installation, follow the P.T.O. manufacturer's installation instructions.

When installation is completed, refill the transmission with fluid and run engine for 5 to 10 minutes to check for leaks.

DIRECT MOUNTED PUMP INSTALLATION

1. To install a direct mounted pump, first of all determine the direction of rotation of the PTO from the illustration below.
2. Align the splined shaft on the pump with the splines in the PTO.
3. Install (2) 1/2NC x 2" GD.5 Cap Screws and Lock Washers. Be sure the pump flange is fully seated onto the PTO housing.

PUMP POSITION FOR:



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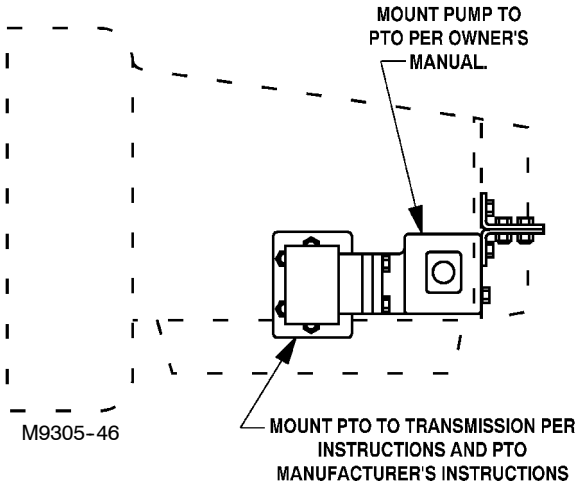

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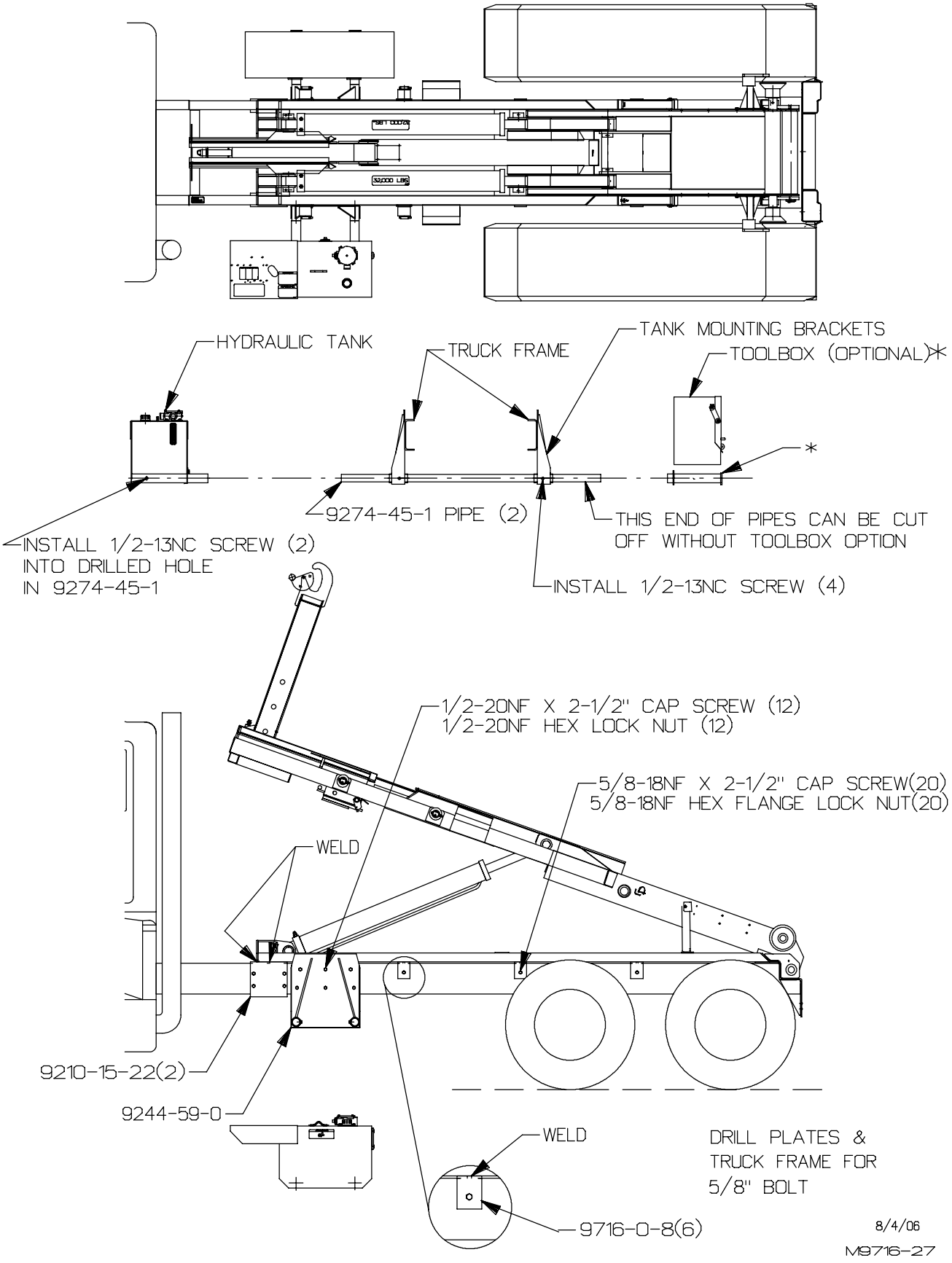
4. Tighten all hardware.

Warning: Direct mounted hydraulic pumps weighing more than 50 Lbs. should be supported at the rear by a strap attached to the transmission.

OIL TANK, VALVE AND HOSE INSTALLATION

Clean all hydraulic components and keep all hoses, tubes, valves and fittings capped until they are to be installed.

BE SURE TO READ THE SAFETY INFORMATION THAT FOLLOWS!



HYDRAULIC TANK INSTALLATION - REFER TO ILLUSTRATION PAGE A4

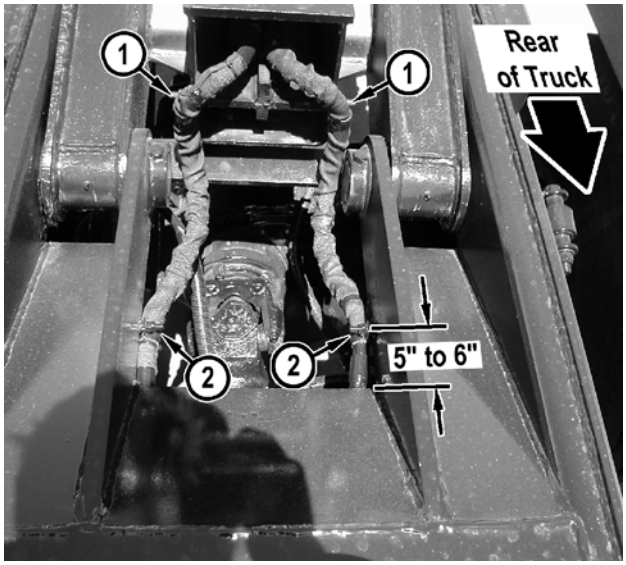
Warning: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

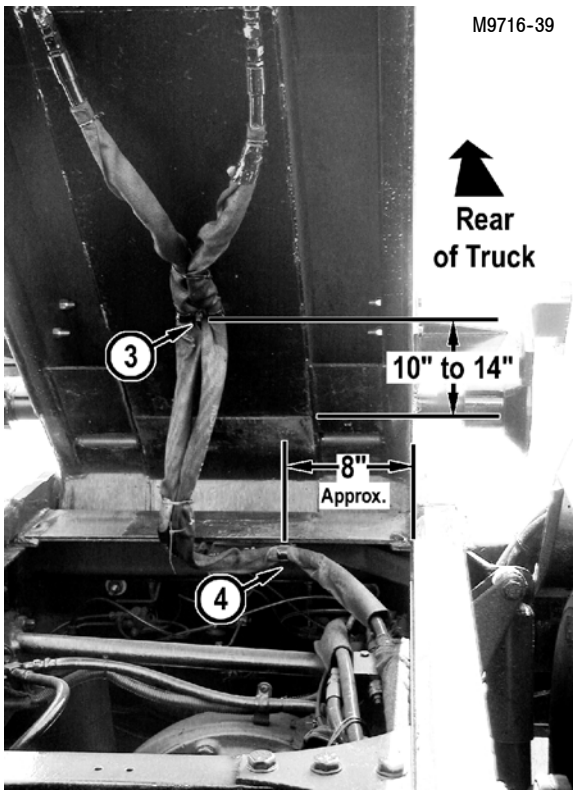
1. Assemble valve, hoses, etc. to tank before mounting tank. Label hoses per illustration.
2. Install the Close Nipple, Gate Valve, and Hose Barb onto the Tank Assembly.
3. Position and clamp the Tank Mounting Brackets behind the rear of the cab boundary per illustration.
   NOTE: It may be necessary to relocate air tanks, fuel tanks, battery cases or any other accessories mounted in this area. Check bolt sides for clearance on hydraulic tank and toolbox mounting.
4. Drill six (6) 1/2" diameter holes in each bracket as shown in illustration. Install 1/2NF x 2-1/2" GD5 Cap Screws and 1/2NF GDB Lock Nuts.
5. Center in tank mounting brackets then install 1/2-13NC Screws.
6. Remove the Tank Assembly and drill 3/8" diameter holes on the marks.
7. Re-install the Tank and tighten the 1/2-13NC x 1" Cap Screws into the drilled holes.

Hydraulic hose routing



M9716-38

1. Weld a 3/8NC x 1" Bolt level with cylinder mounting plate on both sides as shown (Item 1) in photo to the left.
2. Weld a 3/8NC x 1" Bolt approximately 5" to 6" in front of angled plate on the inside just above bottom of side plate, both sides (Item 2) as shown in photo to the left.



3. Weld a 3/8NC x 1-1/2" bolt in center of plate as shown (Item 3) in photo to the right.
4. Weld a 3/8NC x 1-1/2" bolt to bottom inside of rear apron on main frame approximately 8" in from frame edge as shown (Item 4) in photo at right.

Attach hoses using ONE hose clamp at locations 1 and 2 (photo above); TWO hose clamps at locations 3 and 4 (photo at right). Secure clamps with 3/8 lock nuts.

Adjust hoses to allow enough travel and return without getting caught in hoist. Operate through full tilt and full separate boom travel.

INSIDE CONTROL HANDLE INSTALLATION

Route the control cables under the seat and through the back of the truck cab. Seal the cable holes with grommets.

The right lever cable should be connected to the right side control valve and the left lever cable to the left control valve.

1. Choose a convenient mounting location which is comfortable for the operator and provides adequate clearance for control lever movement.

   NOTE: Check the underside of the cab for reinforcement members, air lines, wiring harnesses, and linkages before cutting into the floor.

   IMPORTANT: A GOOD CABLE PATH IS ESSENTIAL FOR A PROPERLY OPERATING SYSTEM. BE SURE THAT THE LOCATION CHOSEN ALLOWS THE CABLE TO BE LED EASILY AWAY FROM THE CONTROL, WITH NO BENDS OF LESS THAN 8" RADIUS. THE CONTROLS MAY BE MOUNTED "FLUSH" IN A CONTROL CONSOLE SIDE MOUNTED, OR BANK MOUNTED AND THROUGH BOLTED AS SHOWN IN ILLUSTRATION ON PAGE P23.

2. Cut out a hole for the control cables and drill four (4) 7/16"DIA. mounting holes.
3. Mount the control handle and brackets as shown in parts drawing on page P23. Be sure that control handle movement corresponds with the direction decal as shown on page O2.

VALVE CONTROL INSTALLATION

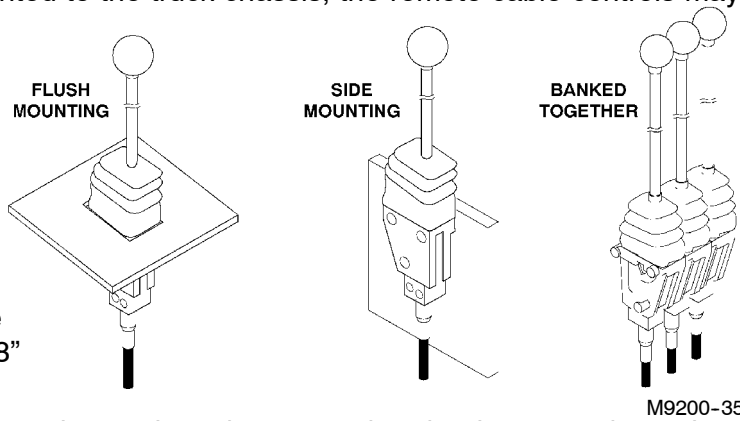
1. Control Handles -- remove the bolts holding the spool cover plate, position the handle assembly on the valve face and install the longer bolts. Install the clevis pin and cotter pin.

The cable controls supplied with the K-PAC Hoists are a high quality assembly which seal out moisture, are corrosion protected, and engineered to minimize backlash (lost motion).

After the hoist and hydraulic tank are mounted to the truck chassis, the remote cable controls may be installed.

Inside Control Handle Installation - Refer to parts page P23

Choose a mounting location which is convenient and comfortable for the operator and provides adequate clearance for control lever movement. Be sure the location chosen allows the cable to be led easily away from the control, with no bends of less than 8" radius.



The controls may be mounted flush in a control console, side mounted, or bank mounted together and through bolted as shown above.

Control operation can be changed simply by turning the control valve through 180°.

IMPORTANT: A good cable path is essential for a properly operating system. Keep bends in the cable path to a minimum and as generous as possible. Under no circumstances should any bend be tighten than an 8" radius.

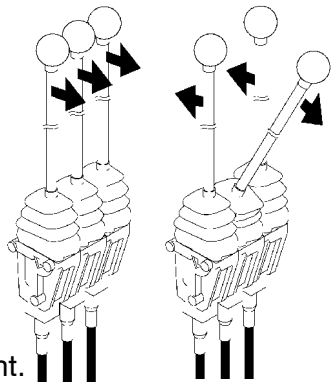
Protect the cable from heat above 225 Fahrenheit, and avoid hot areas such as exhaust pipes etc.

Protect the cable from physical damage, such as pinching or crushing, and do not use cable supports which may crush or deform the cable.

Allow room for flexing where cable is attached to moving parts of the equipment, so that the cable is neither kinked or stretched.

Cable Connections

1. Install the control head end of the cable, by first removing the cable retaining bolt.
2. Slip the cable housing into the control head and replace the retaining bolt.
3. Check the control for free movement and correct valve control.
4. To connect the cable to the valve handle, start by removing the mounting nut from the cable assembly.
5. Install the threaded portion of the cable assembly through the bulkhead weldment and replace the mounting nut.
6. Install the clevis provided to the cable end and the valve handle. NOTE: The cable end should be parallel to the bulkhead weldment.
7. Tighten the cable mounting nut.
8. Screw the control head onto the cable.



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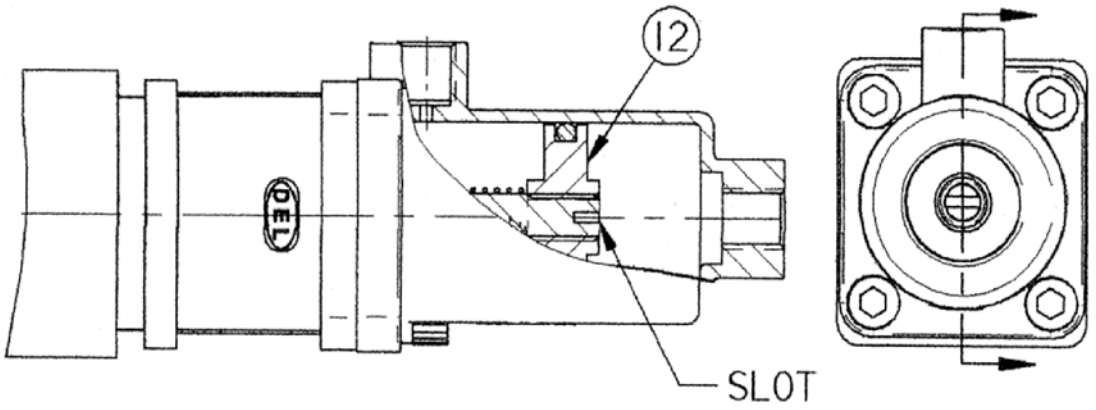
PNEUMATIC CONTROL INSTALLATION INSTRUCTIONS

The optional pneumatic controller provided with K-PAC equipment are dual three-way regulating valves. Output of the controllers is proportional to the control lever position and is balanced against the force of an internal spring.

Pneumatic Actuator Installation

The pneumatic actuator has been partially assembled and pre-lubricated for ease of installation. The actuator does not have to be disassembled for installation.

1. Remove the valve if previously installed.
2. Find a suitable area free of dust and dirt to attach the pneumatic actuators.
3. Set the hydraulic valve on its mounting base.
4. Determine which spools are to be pneumatically controlled.
5. From the valve assembly:
   a. Remove and discard the original retainer screws and valve spring cover.
   b. Retain the handle end of the spool. Remove and discard the 5/16” shoulder bolt from the end of the valve spool exposed by the removal of the valve spring cover.
   c. Remove and discard the original centering spring and two original centering cups.
   d. Insure the original seal retainer on the valve spool is properly seated.
6. Apply a small bead of removable thread lock to the threads of the spool adapter (item 1). Holding the spool on the opposing end, hand tighten the assembly using a flat screwdriver through the rear fitting port into the end of the piston (item 12). **DO NOT USE AN AIR GUN.**
7. Secure the actuator assembly to the valve body using the four (4) socket head cap screws and lock washers (items 4 & 7). Test for proper alignment by turning the valve spool. The spool should rotate freely.
8. Mount the valve and install fittings.



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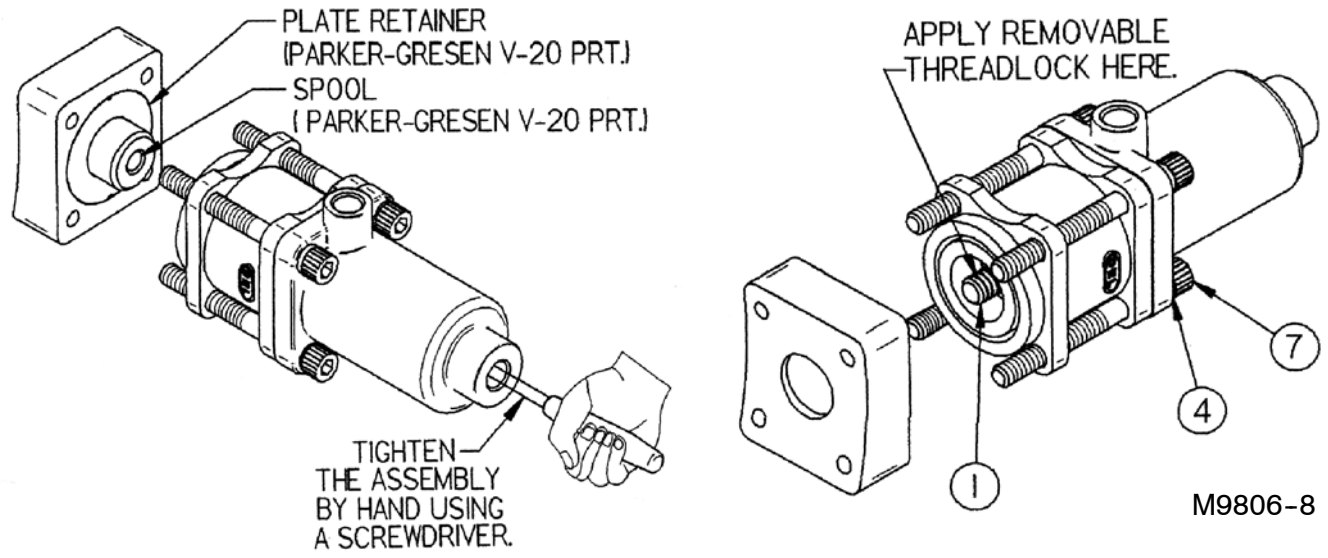


Pre-Assembled Pneumatic Control Tower Installation -- See Parts Section page P22

1. Determine a suitable location which is in a comfortable location for the driver and not in the way of the transmission lever.
2. Position the lower bolt holes so that the bolts will miss any cable, wires or structural members in or under the cab floor.
3. Mark and drill the four (4) .343" diameter holes for the 3/8" self-tapping screws supplied for the tower.
4. Determine a location in the area between the mounting holes to run the air lines.
5. Drill a 2" to 3" diameter hole through the floor of the truck. Remove all burrs and sharp edges. Line the hole with the grommet material supplied.
6. Using the washers on the underside of the floor, attach the tower to the floor with the 3/8" screws and lock nuts.

After the control tower has been mounted, the air lines can be routed. The air line tubing is color coded as shown in table at right:

Blue:	**Winch / Cable In**
Green:	**Winch / Cable Out**
Orange:	**Hoist Raise / On**
Yellow:	**Hoist Raise / Off**
Red:	**PTO**
Black:	**Supply, Exhaust, Auxiliary**

To remove an air line from a fitting, push the line in, hold the internal sleeve of the fitting then pull the air line out.

1. Pass the air lines through the hole lined with grommet material in the floor.
2. Route the exhaust air line outside of the truck cab.
3. Determine a suitable route for the air lines to the control valve. Avoid sharp bends, sharp edges, and heat sources.
4. Install supplied elbow fittings into pneumatic actuators.
5. Connect the air lines to the elbow fittings in the pneumatic actuators.
6. Bundle the air lines together and secure out of harm's way.

A decal with an assortment of .94" diameter labels are provided with the owner's manual. These decal labels can be applied to the under side of the clear plastic caps to identify the function of each pneumatic control handle. After the decals have been applied, snap the clear covers into the handles.

Start-up Procedure

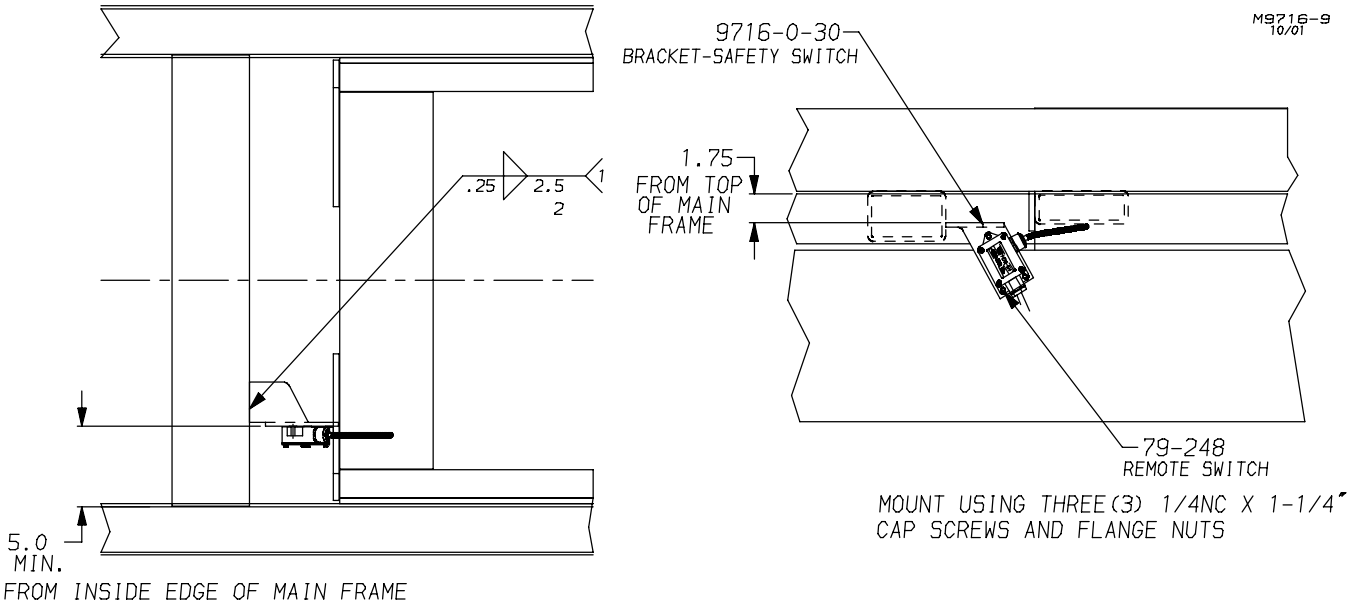
1. Charge the air system of the truck and check all lines for leakage.
2. Operate the controllers and check for correct hydraulic valve movement.
   NOTE: The controllers pressurize the port toward which the handle is moved. If the function is to be reversed, exchange the air lines at the controller or actuator.
3. After the correct connections have been made, and the hoist has been completely installed, engage the P.T.O. to check out the operation of the hoist.

INNER BOOM HYDRAULIC INTERLOCK INSTALLATION

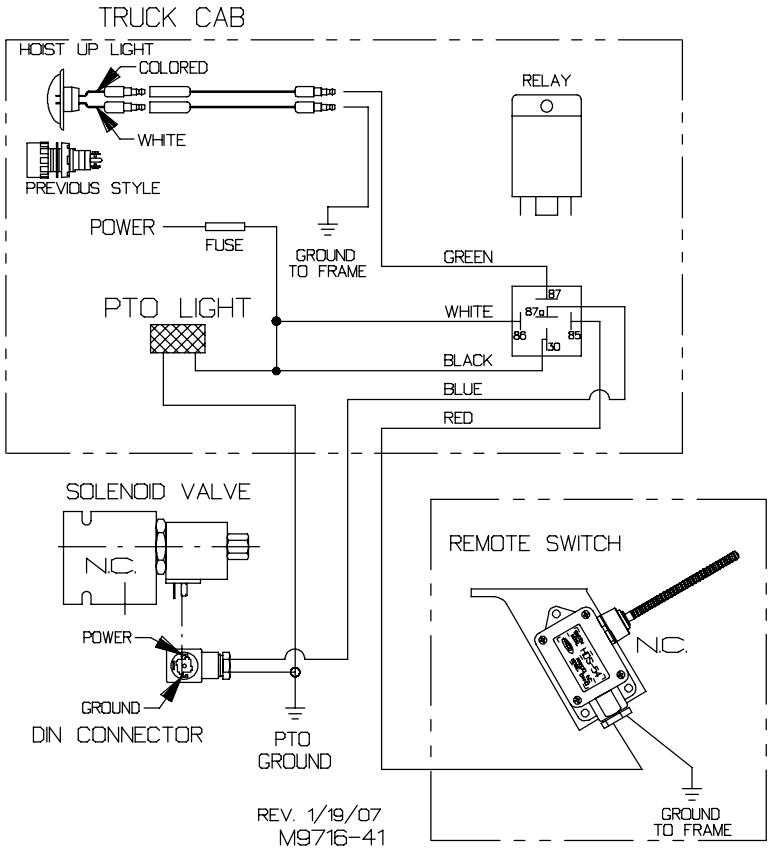
1. Position the switch mounting plate (9716-0-30) on main frame as shown.

IMPORTANT: The switch MUST BE positioned UNDER the tilt frame. If the switch is positioned under the boom, the boom will not retract when hooking to a container or load.

2. Weld switch mounting plate with 1/4" welds.
3. Mount the remote switch (79-248) to mounting plate with 1/4NC x 1-1/4" Cap Screw and Hex Flange Lock Nuts Nuts.



4. Wire remote switch to solenoid valve as shown.



BUMPER INSTALLATION

Lighted Bumper Installation - Reference Parts pages P5, P9

1. Remove the cover plate over the right side access hole.
2. Align the lighted bumper with the holes in the apron. Install (1) 5/8NC x 1-1/2" GD.5 Cap Screws, Lock Washers and Hex Nuts. Torque to specifications. Weld solid to Sub-Frame top and bottom. Add bracing angled up to truck frame. Do not weld brace to truck frame, add bolt plate or weld to hoist frame.
3. Install the wiring harness through the left side access hole.
4. Slip a grommet onto the harness leads and pull through the 5/8" DIA. hole.
5. Attach the ground wire to the bumper with a 3/8" self tapping screw.
6. Install the bumper lights as shown on parts page P5.
7. Connect the leads from the wiring harness to the truck wiring as shown on parts page P9. **For 4-Wire systems:** If truck has 5-Wire system, do not tie the Stop Light and Turn Light together. Instead, tie both the Left Hand and Right Hand Stop Light wires together.
8. Back-Up Alarm.
   1. To install the back-up alarm, run the white and blue leads with bullet sockets through the left side cover plate. Install the cover plate with four (4) 3/8" self-tapping screws. (See drawing on parts section page P5)

   A. Attach the back-up alarm to the cover plate with two (2) 3/8" self-tapping screws.

   B. Connect the white wire to the (-) terminal on the alarm, and the blue wire to the (+) terminal.

   C. Install the "Alarm Must Sound" decal in the cab in FULL VIEW of the operator.

   IMPORTANT: THE BACK-UP ALARM SHOULD SOUND WHEN THE BACK-UP LIGHTS ARE ON.

WIRING HARNESS INSTALLATION

The KP816 should be wired in the manner recommended by the truck manufacturer and should adhere to the laws governing vehicles of the same classification.

Install the side marker light assembly and connect the electrical wiring harness for the brake lights, rear marker lights and reverse lights.

Install the bumper plate cover on both sides.

Install rear identification light assembly.

REAR STABILIZER INSTALLATION

1. Align the stabilizer with top hole in apron. Install (1) 5/8NC x 1-1/2" GD5 Cap Screw, Lock Washer, and Hex Nut. Level stabilizer and torque to specifications.
2. Weld solid all around, apron to stabilizer.
3. Brace lower part of stabilizer to truck frame with some type of angle brace, 1/2" x 2" Strap or stronger.
4. Install the wiring harness through the left side access hole.
5. Slip a grommet onto the harness leads and pull through the 5/8" DIA. hole.
6. Attach the ground wire to the bumper with a 3/8" self tapping screw.
7. Install the bumper lights as shown on parts page P5.
8. Connect the leads from the wiring harness to the truck wiring as shown on parts page P9. **For 4-Wire systems:** If truck has 5-Wire system, do not tie the Stop Light and Turn Light together. Instead, tie both the Left Hand and Right Hand Stop Light wires together.
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   A. Attach the back-up alarm to the cover plate with two (2) 3/8" self-tapping screws.

   B. Connect the white wire to the (-) terminal on the alarm, and the blue wire to the (+) terminal.

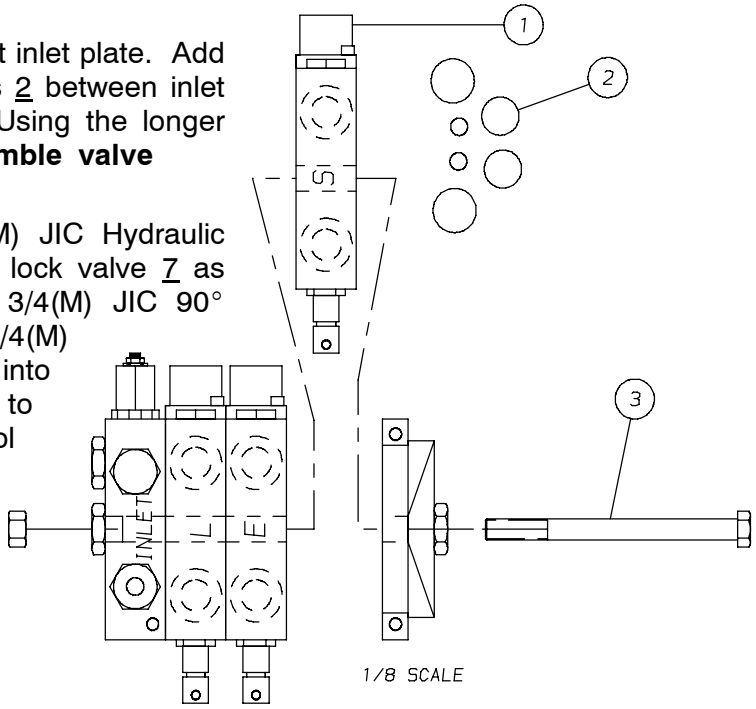
   C. Install the "Alarm Must Sound" decal in the cab in FULL VIEW of the operator.

   IMPORTANT: THE BACK-UP ALARM SHOULD SOUND WHEN THE BACK-UP LIGHTS ARE ON.

10. Stabilizer Installation: See parts illustration on P6. Install stabilizer cylinders from bottom of stabilizer bumper into each outside pocket as shown. Make sure rod end cylinder head has been rotated to align ports with pins. Ports must face to front of truck and align through holes in front side of bumper. Install pins, washers, and cotter pins as shown. Install stabilizer slide weldment into bumper, blocking up so they stay in place. Next assemble shaft and roller, and pin cylinder to shaft to retain assembly together. Be sure both cylinders are completely retracted before completing the hydraulic installation. NOTE: Hydraulic cylinders are rephasing slave cylinders and must start out together or assembly will bind up and be damaged.

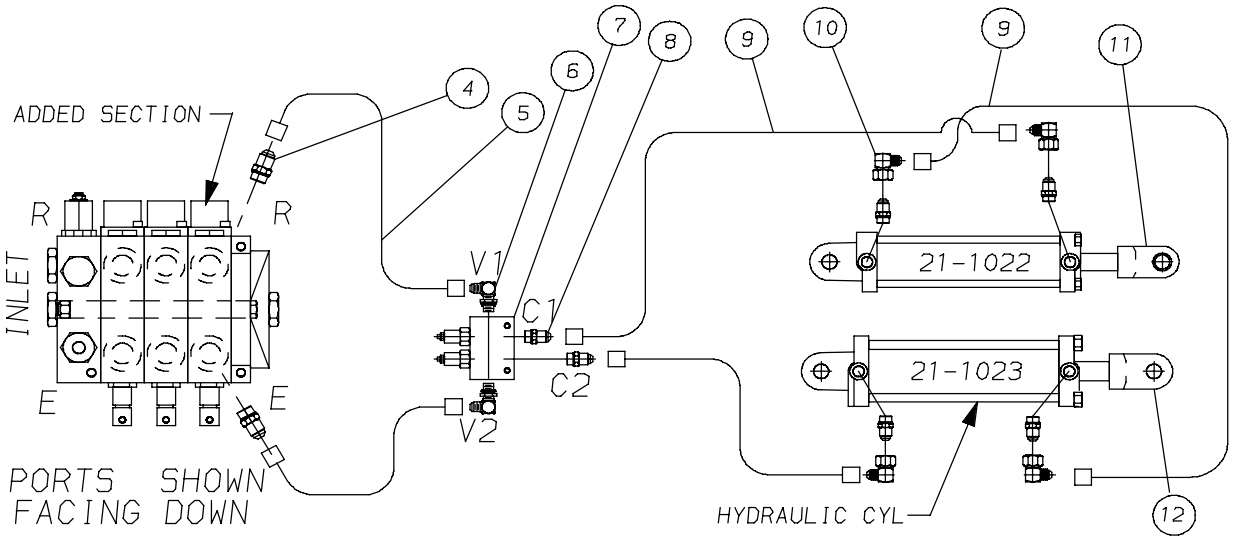
11. Loosen and remove nuts on studs at inlet plate. Add the stabilizer section 1 with o-rings 2 between inlet plate and 3rd section as shown. Using the longer stud bolts 3 supplied, ★**reassemble valve and torque nut to 15 Ft. Lbs.**

12. Install (6) 3/4(M) O-Ring to 3/4(M) JIC Hydraulic fitting 8 into stabilizer cylinder and lock valve 7 as shown. Install (4) 3/4(F) JIC to 3/4(M) JIC 90° Fittings onto fitting 8. Install (2) 3/4(M) O-Ring to 3/4(M) JIC 90° fitting into valve 7. Install (2) 7/8(M) O-Ring to 3/4(M) JIC into 3rd section on control valve. Connect from control valve extend port to V2 port and retract port to V1 on lock valve 7 with hose 5. Connect from lock valve 7, port C2 to stabilizer cylinder base port on 21-1023 with hose 9. Connect cylinder rod end port to cylinder base port with hose 9. Connect from cylinder 21-1022 rod port to C1 on lock valve 7. Route hoses inside truck frame tied away from drive shaft, etc. Make sure cylinders are in phase before connecting all hoses. If cylinders are out of phase when first connecting hydraulics the stabilizer tubes and roller could be damaged. Hold valve open in retract direction to clear air and rephase cylinders.



IMPORTANT: DEPENDING ON THE POSITION OF MOUNTING FEET AND PLATE USED, NEW HOLES MAY NEED TO BE DRILLED FOR THE NEW STUD BOLTS WHEN THE STABILIZER VALVE SECTION IS ADDED.

★**MAKE SURE ALL SURFACES AND SEALS ARE CLEAN BEFORE REASSEMBLING THE VALVE.**



NOTE: CYLINDER END PLATE AT ROD MUST BE ROTATED 90 TO LINE UP WITH FITTING ON CYLINDER END PLATE IN LINE WITH PIN MOUNTING HOLE.

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HYDRAULIC SYSTEM START-UP PROCEDURE

Caution: Do not operate the pump until the system is filled with oil. Damage to the pump bearing and shafts can occur.

1. Fill the reservoir up to 2" from the top of the tank with a high quality of SAE 10 hydraulic oil i.e.: Shell (Tellus 22), Texaco (Rando 22) or Mobil DTE 25.

IMPORTANT: NEVER USE A FOAMING (DETERGENT) TYPE OIL.

2. Check the hoist for loose parts, tools, clamps or chains.
3. Check the overhead area for obstructions.
4. Clear all equipment from under the rear of the hoist.
5. Slowly extend the cylinders. Check for binding, rubbing of hoses or metal-to-metal interference between hoist and truck parts.
6. Operate all hydraulic functions to the full capacity for approximately 5 minutes in order to bleed off any entrapped air from the hydraulic system.

Warning: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.

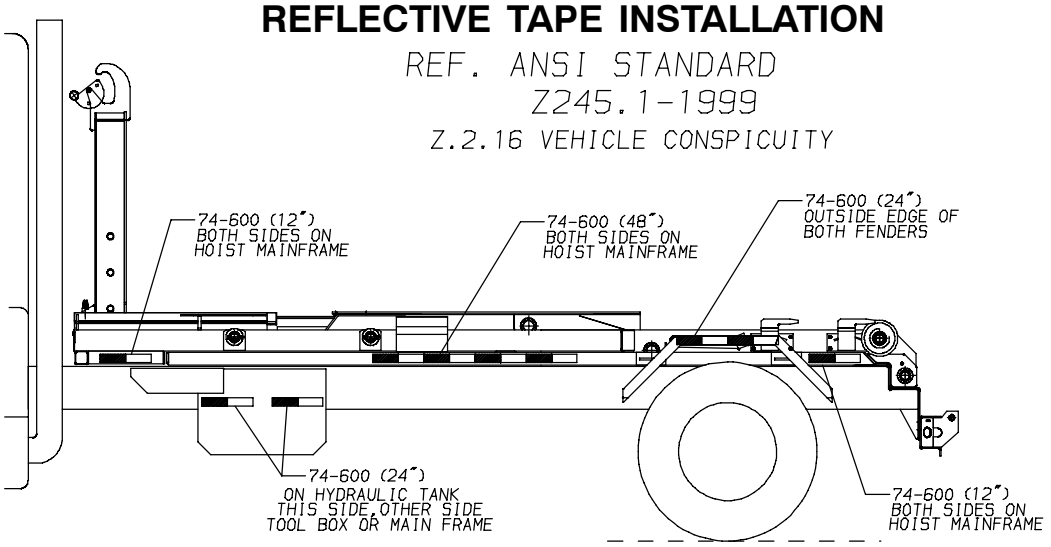
Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

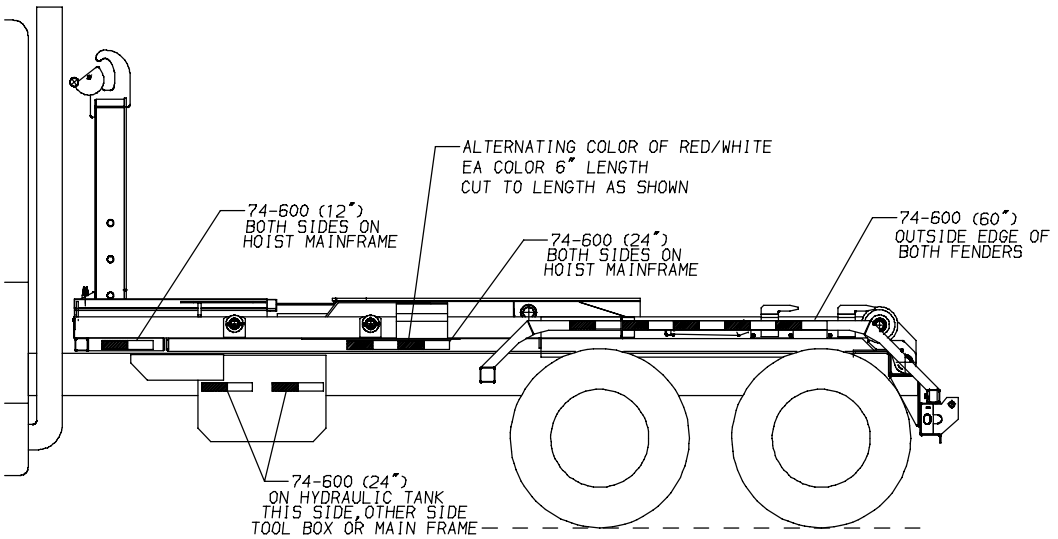
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

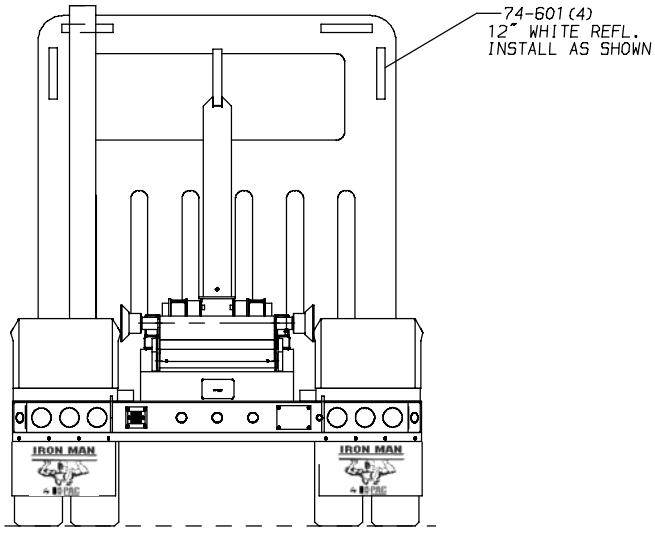
7. Perform a loading procedure with a flat rack or container to put the hydraulic system under load and check all connections and components for leaks.
8. If no leaks are visible, remove and replace the rack or container on the KP816 4 to 5 times to ensure that all moving parts are functioning freely and properly.
9. Load the flat rack or container with a load comparable to the full capacity of the KP816 and perform the loading and unloading procedure to ensure that all hydraulic lines and moving parts are functioning properly under load.
10. Operate the winch control and Free-Wheel Control to ensure that they are correctly adjusted and functioning properly.

REFLECTIVE TAPE INSTALLATION

REF. ANSI STANDARD
Z245.1-1999
Z.2.16 VEHICLE CONSPICUITY







REFLECTIVE TAPE LOCATIONS AND LENGTHS ARE FOR REFERENCE,
YOUR REFLECTIVE TAPE LOCATION MAY DIFFER DUE TO EQUIPMENT OPTIONS.
REFLECTIVE TAPE TO COVER TRUCK CHASSIS OR HOIST FRAME,
PER ANSI STANDARD Z245-1-1999

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